U.S. DEPARTMENT OF TRANSPORTATION

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10th Annual Report

Fiscal Year 1976

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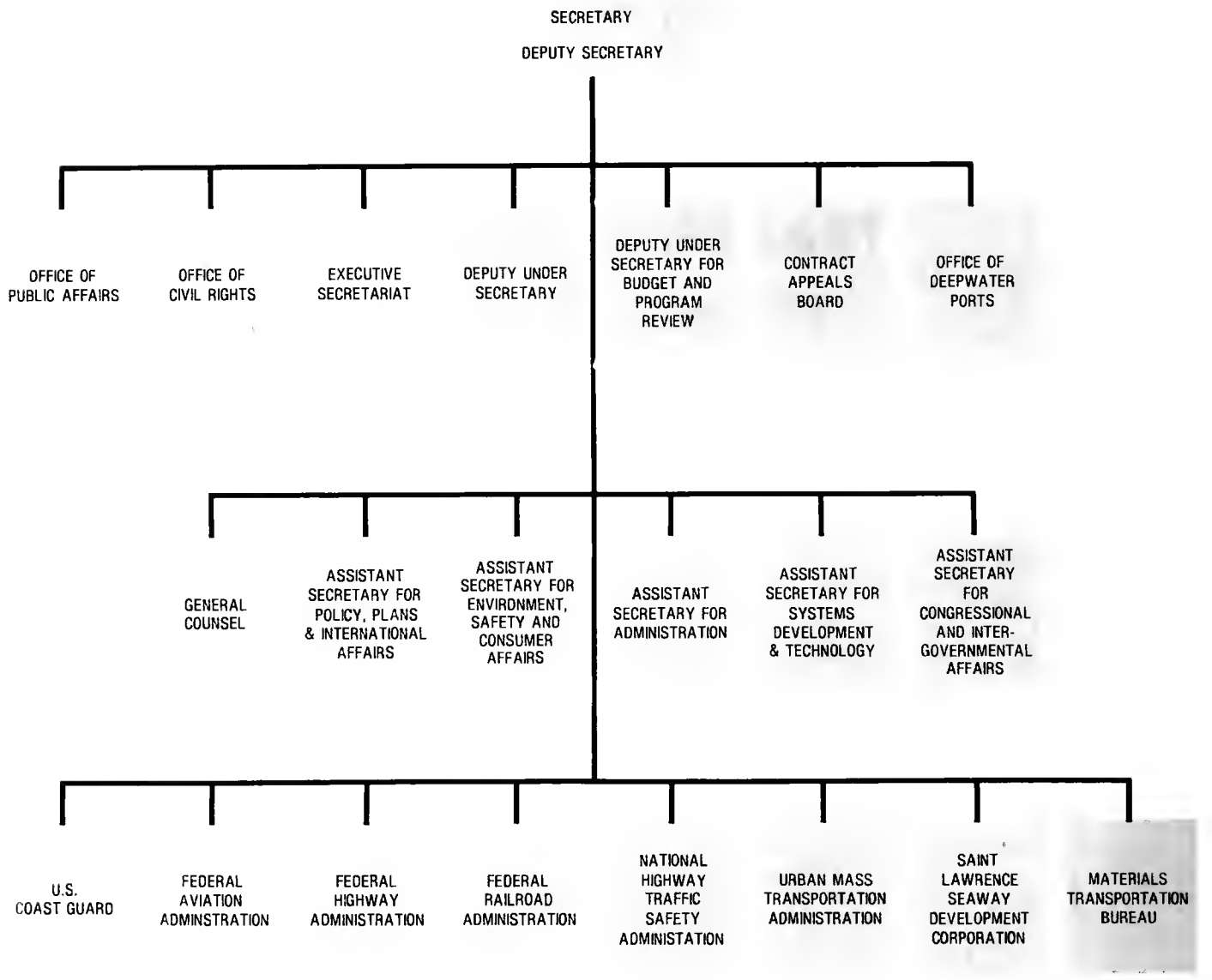

THE SECRETARY OF TRANSPORTATION

WASHINGTON, D.C. 20590

The President
The White House
Washington, D.C. 20500

Dear Mr. President:

I transmit herewith the Annual Report of the Department of Transportation for Fiscal Year 1976.

I recommend that you forward it to the Congress in compliance with section 11 of the Department of Transportation Act.

Respectfully,

Brock Adams

Preface

This report covers both fiscal year 1976 (July 1, 1975 through June 30, 1976) and the transition quarter (July 1, 1976 through September 30, 1976).

Except where some other period is specified, the narrative portion of the report refers to the entire 15-month period covered by the report.

In the Appendix, each table and figure specifies the particular time period or periods covered.

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Summary

Summary

The primary responsibilities of the U.S. Department of Transportation are to assure the coordinated and effective administration of federal transportation programs and to develop national transportation policies and programs conducive to the provision of fast, safe, and convenient transportation at the lowest possible cost. The following paragraphs summarize a few of the Department's fiscal year 1976 activities in carrying out those responsibilities. More detailed accounts of these and other departmental activities are given in Part II of this report.

Transportation Policy

Early in the year, the Secretary issued a statement of national transportation policy. The statement gave special attention to federal policy toward the various transportation modes and to the balance between government and private responsibilities.

International Air Carriers

A statement of policy on international air transportation was issued, and steps were taken to strengthen the competitive position of U.S. international air carriers.

Economic Regulation

A significant step in regulatory reform occurred with passage of the Railroad Revitalization and Regulatory Reform Act. Among other things, this legislation provides more flexible standards for approval of railroad rates.

Tunneling

After investing $10 million in research funds over a three year period, the Department's tunneling program has developed new techniques and new design criteria which are expected to save over $30 million on current subway projects.

Noise Abatement

The first federal regulations to control motor vehicle noise on highways went into effect. The regulations are applicable only to large trucks. Late in the year, the Secretary recommended to the President a plan to reduce airport noise by replacement or modification of the oldest and noisiest civil aircraft.

Environmental Impacts

The Secretary made several decisions affecting local environments, including approval of a site for a proposed new St. Louis airport* and Concorde landings at two U.S. airports on a trial basis.

An environmental research study was begun, to determine the transportation controls needed in order to implement the Clean Air Act. In addition, an effort was begun to find potential uses for abandoned railroad rights of way.

Consumer Affairs

The Department began implementing its consumer representation plan. Under the plan, all elements of the Department will increase consumer involvement in the development of transportation regulations and in transportation planning.

Maritime

The 1976 iceberg season was moderately light, with an estimated 151 icebergs drifting south of 48 degrees north latitude. Coast Guard ice operations, however, encountered the worst ice conditions in 80 years in the western Arctic and additional vessels had to be deployed in order to resupply the defense installations and oil fields on the north slope of Alaska.

During the year, the Coast Guard began a long term project to upgrade the positioning of its aids to navigation, and it continued its efforts to increase the reliability of its navigation aids. Work continued on construction of the West Coast Loran C stations and work began on the Gulf of Mexico and East Coast stations.

The Coast Guard participated in the seizure of 22 vessels carrying drugs or other dangerous substances. It seized 19 foreign vessels for illegal fishing and 20 vessels for taking fisheries resources from the U.S. continental shelf. In addition, 6 Japanese vessels were turned over to Japanese authorities for prosecution for violating treaty restrictions on taking salmon and halibut.

A number of new or revised regulations were published related to commercial vessel safety, and the Coast Guard cooperated in the publication of an international code for ships carrying liquefied gases. Several manuals relating to hazardous materials handling were also published.

In boating safety, the Coast Guard monitored 120 recall campaigns to correct potential boat hazards and 83 boats were tested for compliance with federal standards. Thirteen failed to meet the applicable standards.

The first oil pollution penalty based on evidence collected by all-weather airborne remote sensing equip-

*This approval was later rescinded.

ment was assessed during the year, and equipment for the forensic analysis of oil was distributed to six major ports.

Deepwater port regulations were developed and published, and two applications for the construction of deepwater ports were received.

One of the Coast Guard's new 400 foot icebreakers was delivered and construction of a second was nearly completed. Specifications were completed for a medium range aircraft to replace the present fleet, which is nearing the end of its maximum operational life.

Construction of a new Coast Guard communications station to cover the Atlantic area was completed.

Marine research accomplishments included progress in developing improved pollution detection and pollution abatement equipment and development of a miniature Loran-C receiver.

Cargo shipments through the U.S. portion of the Saint Lawrence Seaway rose 13 percent during 1976, to 54.4 million tons. This was the second highest volume in the Seaway's history. Seaway revenues were up 16 percent, to $7.3 million.

Aviation

A major aviation safety action was taken with the issuance of a directive requiring the strengthening of the floors in DC-10, L-1011, and B-747 aircraft so that they will withstand in-flight depressurization.

The Federal Aviation Administration's new regulatory review program, which began in 1974, continued to be a success; and a new program, providing for intensive review of limited portions of the regulations, was initiated.

The flight inspection modernization program was essentially completed, with delivery of the remaining aircraft needed to modernize the flight inspection fleet.

A bomb concealed in an airport locker killed 11 people and injured 54 others, and one jetliner was hijacked during the year (using a bogus bomb); but the aviation security program continued to be effective, and more than 20 attempted hijackings were disrupted.

The U.S. aviation safety record was the best in recent years, with only 3 fatal domestic air carrier accidents and only 124 fatalities. This was the lowest number of fatalities since 1957. The U.S. *scheduled* domestic and international air carriers had only 2 fatal accidents, with only 113 fatalities and a passenger fatality rate of only 0.070 per 100 million passenger miles.

Highways

Approximately $2.6 billion in federal funds were obligated for construction or improvement of the interstate highway system, and the total mileage in use was increased by 964 miles.

The total federal funds obligated for highway construction or improvements during the year amounted to more than $6.4 billion. In addition to the funds obligated for the interstate system, approximately $3.8 billion was obligated for noninterstate highway projects. Of this amount, over $1 billion was obligated for street and highway safety improvements.

The Federal-Aid Highway Act of 1976 extended the federal-aid highway program through fiscal year 1978, at an annual funding level of $7.6 billion. For the first time, the program will include funds for rehabilitation of existing interstate highways. Funding for construction of the interstate system was extended through fiscal year 1990 at $3.6 billion per year.

The removal of 26 miles of highway from the planned interstate system was approved during the year, releasing over $900 million in highway funds for other transportation projects.

The 55 mph speed limit continued to be an effective fuel conservation measure, with estimated savings ranging as high as 2.9 percent of the projected fuel usage.

The federal motor carrier noise emission regulations became effective and enforcement began. There was a steady decrease in violations as the year progressed.

Traffic safety continued to improve, with the death rate down to 3.42 deaths per 100 million miles (compared to 5.58 in 1966). Nonetheless, 45,500 people lost their lives on U.S. highways.

Several problems stood in the way of more rapid improvement in traffic safety. They included an increase in average speeds, an increase in the proportion of small cars, an increase in per capita alcohol consumption, and an increase in the annual vehicle miles driven.

New or revised standards were issued during the year to improve the crash survivability of school buses. They included better seats, stronger roofs, improved emergency exits, and safer fuel systems. To improve the crash avoidance capability of all motor vehicles, new or revised standards were issued for rims, defrosters, brakes, and lights. Late in the year, a court upheld the National Highway Traffic Safety Administration's proposed tire quality grading regulations, permitting issuance of the final regulations.

The integrated test vehicle program continued, with the fabrication of two test vehicles. Both vehicles, which were based on different designs, provided increased crashworthiness, improved occupant protection, and excellent fuel economy.

Summary

A special diagnostic inspection demonstration program was begun which will assist in the development of equipment suitable for use in high volume facilities. The goal is to assess vehicle compliance with safety, noise, and emission standards while simultaneously optimizing fuel economy and minimizing maintenance costs.

The National Highway Traffic Safety Administration has developed an automotive test facility at East Liberty, Ohio, to improve its ability to do safety defect testing and to handle part of its compliance testing activities. Testing began at the facility in September 1976.

Emergency medical service programs continued to expand and improve. By the end of the year, more than 180,000 emergency medical technicians had completed the Department's basic emergency medical course and 5,000 Navy corpsmen were being trained. New or improved ambulance service became available in many communities, and 23 sites with military helicopters and medical crews were aiding in the emergency treatment and transportation of highway crash victims.

Experiments in Seattle with an informal approach to the processing of noncriminal traffic infractions were successful. The program was expected to continue with state and local funding. Plans were underway to test the approach in suburban and rural areas. In general, the informal proceedings appear to produce better driving behavior than either court trials or forfeiture of bond without appearance.

Efforts to curb the adverse effects of alcohol abuse on traffic safety continued. A Stockton, California, demonstration project to reduce the number of drinking drivers resulted in a marked decrease in the number of motor vehicle crashes during the time the project was in operation. Many states were carying out locally funded alcohol safety action programs based on information and materials from successful demonstration projects which were federally funded.

Railroads

An analysis of train accident causes disclosed that 39.3 percent of all train accidents were the result of track defects. Equipment defects were the cause of 23.7 percent of the accidents, and 23.1 percent were caused by human error.

The Federal Railroad Administration has begun an automated track inspection program, using vehicles that measure track geometry and check for rail flaws. During the year, 24,000 miles of track were inspected. Additional inspection vehicles were on order.

Roadtesting was conducted on five types of passenger locomotives used by Amtrak, to determine and correct any derailment tendencies. As a result of the tests, major modifications were made to several of the locomotives.

New or revised regulations were issued to provide better protection to railroad employees working on rolling stock, to simplify accident reporting procedures, and to improve locomotive and freight car standards.

The Consolidated Rail Corporation began operations, and those states containing branch lines which were excluded from the Consolidated Rail Corporation became eligible for federal aid in subsidizing operations on the excluded lines. Among the 18 states eligible for this aid, 14 chose to subsidize operations on a total of 3,200 miles of rail line.

At the end of the year, 14 states were participating in the federal – state rail safety program. Expansion of the program is expected as new safety regulations are issued.

A total of $310,878 was provided to 7 cities for the preservation of railroad stations. Applications from 5 other cities were being considered.

Planning and design activities continued in the northeast corridor development program. Track improvements completed during the year included resurfacing 24.4 miles of track, installing 4,776 new switch timbers and 6,492 new cross ties, and welding or renewing 335 rail joints.

Preliminary agreements were reached with the general contractors for work on the $1.9 billion northeast corridor rail passenger service project. As mandated by Congress, the system must provide (within 5 years) a 3 hour and 40 minute schedule between Boston and New York and a 2 hour and 40 minute schedule between New York and Washington.

A clearinghouse experiment, designed to improve the utilization of freight cars, continued to be a success. At the end of the year, 10 railroads were participating. Significant savings were anticipated for all 10 railroads.

The Federal Railroad Administration's research activities continued to concentrate on the industry's current technological problems. Operations began at the Department's accelerated service testing facility. The locomotive noise tests were completed, and a report on improving railroad fuel efficiency was published. A program to evaluate and improve passenger equipment was begun, and tests of the flammability of passenger car materials were completed.

The track – train dynamics program continued. The first phase resulted in the development of mathematical models of car motions and train dynamics. The second phase will include studies of track structures, load and temperature variations, fatigue, and coupler design.

Work continued on the development of effective thermal shields for tank cars and on a set of perfor-

mance specifications for a national tank car modification program.

Tests of prototype devices to detect overheated journal bearings and local derailments proved successful. In-service testing of the devices will be conducted to determine their durability and reliability.

Urban Transportation

The Urban Mass Transportation Administration issued a policy statement defining the planning analysis that will be required to justify federal funding of fixed quideway transit systems. It also specified the procedures that will be followed in considering requests for such funding.

During the year, rail transit systems received $1.4 billion in capital grant funds. Bus systems received $430 million, and ferries and miscellaneous types of transit received $78 million.

Major capital grant commitments were made to the states of Connecticut and New Jersey and to the cities of Seattle, New York, Boston, Atlanta, Baltimore, Miami, Buffalo, Chicago, and Washington.

Commitments of operating funds under the formula grant program totaled $449 million. In addition, $32 million of formula grant funds were committed to capital assistance grants. A total of $8.4 million in formula grant funds went to experimental projects in transit operation.

Several demonstration projects were conducted during the year. A number of the projects involved the use of taxis in low density areas. Other projects emphasized vanpooling and transit malls. The first waterborne demonstration project was also funded.

Regulatory activities during the year included publication of a regulation requiring urbanized areas to develop transportation management plans which will improve both mobility and the environment while conserving energy. Special efforts were begun to monitor the plans and to provide technical assistance in their implementation.

New regulations were issued governing the provision of charter and school bus service by federal grant recipients. Also issued were regulations that formalized the requirements for transportation for the elderly and handicapped.

The Urban Mass Transportation Administration announced its requirements for the design of transit buses to be purchased with federal funds. Effective in February 1977, all new transit bus procurements were to include a requirement that the effective height of the floor not exceed 24 inches. This is almost a foot lower than the current height of transit bus floors and should substantially improve their accessibility for the elderly and handicapped.

Revenue service tests of two rail transit cars with flywheel energy storage systems indicate that the flywheel system can reduce energy consumption by 20 to 30 percent. As a result, an energy storage system using the same basic technology will be included in the advanced rail transit cars which are now being developed.

The nation's first operational urban personal rapid transit system, located in Morgantown, West Virginia, has exceeded its design goals of service availability. As a result, the Urban Mass Transportation Administration is considering the personal rapid transit system as a means to revitalize the center of many urban areas.

Materials Transportation

The Materials Transportation Bureau was established within the Department of Transportation on July 7, 1975, to carry out the Department's responsibilities in the areas of pipeline safety and the safe shipment of hazardous materials.

Pipelines. The Materials Transportation Bureau is responsible for both gas and liquid pipeline safety. During the year, 73 fatalities and 445 injuries resulting from gas pipeline failures were reported. In addition, 5 deaths and 4 injuries were reported from liquid pipeline accidents. Total accidents or failures reported were 1,780 for gas pipelines and 281 for liquid pipelines.

Several amendments to the federal pipeline safety standards were issued during the year. They included requiring additional protection for cast iron pipelines which are disturbed, permitting the use of recently developed sealing methods for certain joints in cast iron pipe, providing more appropriate requirements for field bending of steel pipe, and enlarging the scope of the regulations as they apply to offshore pipelines.

All 50 states, Puerto Rico, and the District of Columbia participate in the federal – state gas pipeline safety program. As a result, all states are able to enforce federal standards with respect to intrastate gas pipeline facilities. A total of 43 states applied for and received $1.6 million in federal financial assistance for administering their pipeline safety activities.

During the year, the Materials Transportation Bureau established four new regional offices to carry out pipeline safety compliance programs. It also continued to emphasize pipeline safety training and offered 4 pipeline safety courses for state and industry personnel.

Pipeline safety research concentrated on analysis of leak and failure reports, on testing pipeline components to determine the causes of pipeline failures, and on programs for the prevention of damage to pipelines by outside forces (the cause of more than half of the

pipeline failures).

Other technical studies underway included establishing appropriate safety practices for offshore pipelines, studying the problems of storing and handling liquefied natural gas, and seeking solutions to pipeline stress and corrosion problems.

Hazardous Materials. The Materials Transportation Bureau completed a number of hazardous materials regulatory activities during the year. One action was the consolidation into a single volume of the hazardous materials regulations of several agencies.

The regulations pertaining to documentation and labeling of a large number of materials were eliminated entirely. More than 700 exemptions to the regulations were also eliminated, by publishing as regulations the standards which had been the basis of the issuance of the exemptions. New exemption procedures were established which require the submission of a safety analysis when requesting an exemption.

Research activities involving hazardous materials included publishing a report containing toxic point calculations for 57 substances, conducting a large number of materials classification tests, completing the first phase of a comprehensive study of the use of plastics for hazardous materials packaging, and completing a study to develop performance oriented specifications for boxes and cases used for packaging hazardous materials.

During the year, 15,156 unintentional releases of hazardous materials were reported. These unintentional releases resulted in 31 fatalities and 1,043 injuries.

Progress Reports

Office of the Secretary

The Office of the Secretary provides staff and advisory support for the Secretary and supports and coordinates the activities of the various administrations within the Department. In addition, the Office of the Secretary has primary or sole responsibility for carrying out certain programs. This report emphasizes those programs.

Transportation Policy

In September 1975, the Secretary issued a statement of national transportation policy. The statement was concerned with federal policy toward each of the major transportation modes. It examined the balance between governmental and private sector responsibilities. It suggested ways to assure more equitable federal treatment of the various modes and to enable the private sector to provide more effective service. Finally, the statement gave attention to the safety, energy, and environmental impacts of the transportation system.

In September 1976, the Secretary issued a report reviewing the progress made toward attaining the objectives of the policy statement. It emphasized the rail revitalization program and regulatory reform.

International Air Transportation

The Department made progress in carrying out the policies of a federal action plan designed to strengthen our international air carriers through route restructuring, service suspension, unilateral capacity reduction, capacity limitation agreements, more compensatory mail rates, and the increased use of U.S. flag carriers. Steps were also initiated, in appropriate cases, to defend our carriers against discriminatory treatment abroad.

Economic Regulation

In the area of federal economic regulation, a long-term Departmental goal has been to reform certain features of the current regulatory pattern. During the year, a significant contribution was made with passage of the Railroad Revitalization and Regulatory Reform Act. This legislation provides more flexible standards for approval of railroad rates, modifies the Interstate Commerce Commission authority to suspend rates pending investigation, and prohibits certain anticompetitive activities by rate bureaus. In addition, the Department prepared legislative proposals for regulatory reform affecting the commercial aviation and motor carrier industries. These proposals would increase rate flexibility, reduce entry barriers, reduce operating restrictions, and restrict anticompetitive activities presently covered by antitrust immunity.

The Department also participated in proceedings before the transportation regulatory agencies — the Interstate Commerce Commission, the Civil Aeronautics Board, and the Federal Maritime Commission. The cases which were selected involved major issues, such as reforming regulatory pricing and operating restrictions, maintaining competition, and improving service. During the year, the Department:

- Urged the Civil Aeronautics Board to adopt rules authorizing new and attractively priced charter travel options for air passengers;
- Supported, before the Interstate Commerce Commission, a major expansion of commercial zones exempt from transportation regulation; and
- Opposed Interstate Commerce Commission adoption of "market dominance" rules which would have curtailed the railroad markets in which the pricing flexibility provisions of the 1976 reform legislation could be applied.

Policy Research

The development of transportation policy is supported by a program of research which is designed to discern future problems, investigate feasible solutions, and evaluate performance. In this respect, substantial attention was given over the past year to the following areas:

- Analyzing the impact of rail abandonments and consolidations upon freight shippers;
- Studying the process of capital investment in the railroad industry, including determination of the types of projects currently most cost beneficial for the industry and the general economy, as well as guidelines for federal capital assistance to the railroads;
- Analyzing the diverse economic, social, environmental, travel, and urban development impacts of the Bay Area Rapid Transit System;
- Establishing reliable measures of transportation system performance and service;
- Preparing the 1976 edition of the *Summary of Na-*

tional Transportation Statistics and its supplement on energy statistics which provided cost, inventory, and performance data for passenger and freight operations in all modes;

- Preparing a highway safety needs study which weighs the cost and effectiveness of 37 selected measures suitable for application over the next decade in making our highways safer;
- Analyzing, from the overall transportation standpoint, a proposal to replace the deteriorating waterway facilities at Alton, Illinois, with a new dam and two 1200 foot locks at a cost of several hundred million dollars; and
- Studying the role of transportation in the energy economy, including conservation of energy within the transportation system, motor vehicle goals beyond 1980, and more efficient transportation of energy materials.

New Activities

During the year, the Department established two new offices in the general policy area — an Office of Transportation Planning, to respond to the need for more effective planning at the national level, and an Office of Rural Transportation Policy, to identify and resolve the transportation problems of rural communities.

International Cooperation

The Department's international cooperation activities continued to adapt to current needs. In particular, while regular activities continued with all foreign partners, new projects were developed — (1) with the French, providing for the loan of certain French soil testing equipment to be evaluated by the Federal Highway Administration; (2) with the Germans and Canadians, providing for joint testing of magnetic levitation equipment; and (3) with the French and Germans, providing for joint evaluation of various automated guideway transit projects designed for possible use in urban centers.

Information Sharing

Support of the Urban Consortium for Technology Initiatives (the organization representing the mayors of the nation's 28 largest cities and the managers of 6 urban counties) was broadened to include Urban Mass Transportation Administration funding. The overall project provides a way for the transportation needs perceived by elected officials in these jurisdictions to be used in guiding the Department's research programs.

Legislatures and legislative staffs were the target of another survey, again for use in establishing new or in reorienting existing research, if necessary. A clearinghouse for scientific and technical information has been established by the National Conference of State Legislatures, to serve as a resource center for legislative inquiries.

Continued support of programs to provide user access to its research resulted in the Department's publication of a second directory of technology sharing activities. Over seven thousand copies of the first directory were requested by or distributed to state and local governments, private industry, and universities.

As part of the Department's continuing effort to develop and publish summary documents tailored to specific users in areas of critical interest, two new documents were produced — a primer on transportation and energy and an annotated selected bibliography on the subject of transportation noise.

Motor Vehicle Goals

In March of 1975, the President's Energy Resources Council directed that the Secretary of Transportation head a federal task force on motor vehicle goals beyond 1980. The task force evaluated the potential for the most effective and practical conservation of petroleum by automobiles, trucks, and buses, keeping in mind compatibility with the environment, safety, and economics. The task force was made up of personnel from the Federal Energy Administration, the Energy Research and Development Administration, the Department of Transportation, the Environmental Protection Agency, and the National Science Foundation, with assistance from other administrations as needed. The Department released the report by the task force on September 2, 1976.

Advanced Systems Programs

Through the cooperation of the Office of the Secretary and appropriate operating administrations, four program areas were identified as requiring new or expanded effort in order to prepare for long term needs and opportunities. They were — (1) an integrated road – vehicle program to explore the possibility of passing the function of vehicle control from the driver to a road – vehicle system; (2) an advanced intercity network evaluation study to provide a knowledge base for coping with growth in intercity passenger travel and to synthesize and evaluate new ways of improving service and costs; (3) a freight system evolution study to determine the most desirable directions for the evolution of the freight system; and (4) a multipurpose fixed guideway technology program to provide a knowledge

base applicable for the whole range of nonhighway fixed guideway systems.

An Office of Advanced System Concepts was established at the Department's Transportation Systems Center, and a significant proportion of the work on future system alternatives was being undertaken there.

Tunneling

The Department's tunneling program turned the cost-reduction corner in fiscal year 1976. After an investment of approximately $10 million in research and development funds over a three-year period, specific savings in excess of $30 million were identified.

In Atlanta, the decision to tunnel rather than excavate a section of subway was expected to result in approximately $11 million in savings.

In Baltimore, a 1700-foot long test section of precast concrete tunnel liners was to be installed. Total savings of $6 million per mile of subway were anticipated.

Through sponsored research at the University of Illinois, new approaches to the design of subway stations were developed. Application of the new design criteria was expected to reduce future construction costs of rock stations in Washington, D.C., by about $10 million.

Advanced Research Projects

The Department's advanced research projects program supports research in multimodal technologies. The program consists of four subprograms — (1) development of control techniques for large scale transportation systems; (2) development of techniques for analysis of large scale transportation networks; (3) development of ride quality criteria; and (4) development of noncontact suspension – propulsion technology.

The control techniques subprogram and its project on freeway corridor traffic control, which have been supported by both the Federal Highway Administration and the Office of the Secretary, are soon to be handed off to the Federal Highway Administration.

The Urban Mass Transportation Administration and the Federal Highway Administration have both given strong support to the network analysis subprogram, which has aimed at developing algorithms for the rapid solution of transportation network problems.

The ride quality subprogram supports research on the development of ride quality criteria for ground transportation systems; the Federal Highway Administration, the Urban Mass Transportation Administration, and the Federal Railroad Administration have all shown interest in this subprogram. (A very successful ride quality symposium was held during fiscal year 1976.) Participation in the various ride quality committees of the International Organization for Standardization has had significant impact on the interpretation and use of the published international ride quality standards.

The noncontact suspension – propulsion subprogram, initiated in fiscal year 1976, has just begun research on combined magnetic levitation – propulsion technology. The Urban Mass Transportation Administration, the Federal Railroad Administration, and the Office of the Secretary have technical consultants and monitors on this subprogram.

Noise Abatement

On October 15, 1975, the first federal regulations to control motor vehicle noise generated on U.S. highways went into effect. These regulations enforce earlier Environmental Protection Agency standards for noise emission levels of interstate motor carrier trucks of over 10,000 pounds gross weight. Federal inspectors use a convenient stationary test procedure which simulates a freeway-speed passby measurement. This test procedure can be conducted along with other routine safety checks. Similar compliance procedures are being encouraged for state and local law enforcement agencies. Their help will increase the effectiveness of the program.

On January 14, 1976, the Federal Railroad Administration began development of regulations to enforce noise emission standards for interstate rail carriers. Maximum noise level regulations for locomotives and other rolling stock were to become effective January 1, 1977.

In June 1976, the Secretary formally recommended to the President an airport noise reduction program designed to encourage replacement of the oldest civil turbojet airplanes and modification of those airplanes which do not meet new aircraft noise standards but which retain a substantial useful life. The recommendation also defined the relative responsibilities of the federal government, the airport proprietors, state and local governments, and the aircraft operators, in order to provide a coordinated cooperative approach to airport noise abatement.

Energy Conservation

During the year, the Department established a voluntary truck and bus fuel economy program to encourage fuel-efficient operation of the nation's commercial vehicles.

As a result of this program, information has been

issued describing readily available methods to improve fuel economy. Substantial energy savings are possible through items such as radial tires, wind screens, and demand-actuated cooling fans. An added incentive is that using these energy saving approaches will also reduce operating costs.

University Research

In fiscal year 1976, the Department awarded 60 university research contracts (33 new and 27 renewals) totaling $3.5 million. The university research program focuses on transportation problems of long range importance. The contracts cover such categories as — economics and regulations; science and technology; operations and systems concepts; social and behavioral aspects of transportation; and safety and environment.

The university program completed three policy workshops during the year:

- Regulatory Reform and the Federal Aviation Act of 1975 — Northwestern University, February 29 and March 1, 1976;
- Priorities for University Research — National Academy of Sciences, March 18 and 19, 1976; and
- Intermodal Safety Research Needs — Washington, D.C., April 28 and 29, 1976.

On April 22, 1976, a very successful conference on research and training opportunities for minority colleges was held in Washington, D.C. Over 125 people interested in minority opportunities attended this conference.

Environmental Review

The Office of the Secretary continued to monitor the environmental impacts of Departmental actions. This monitoring resulted in significant improvements in a number of proposed projects. Major efforts were devoted to a review of large controversial projects, such as the proposed new airport for the St. Louis metropolitan area, Interstate 66 in the Washington, D.C., metropolitan area, the Everglades Airport, Interstate 40 in Memphis, Tennessee, and the decision whether to allow the Concorde to land at Dulles and J. F. Kennedy Airports. The Secretary held public hearings on Interstate 66, the St. Louis airport, air bags, and the Concorde, in an effort to make the decision-making process more responsive to public opinion. After reviewing the public hearing testimony, the environmental impact statements, and other data, the Secretary decided to approve the proposed new air carrier airport site for St. Louis* and also approved Concorde landings on a trial basis.

*This approval was later rescinded.

Environmental Research

Phase I of a multi-year project to develop a notebook series, *Guidelines for Assessment of Transportation Alternatives*, was completed with publication and distribution of a six notebook set on *Highways*. The next phase of the series, *Airports*, was started.

In cooperation with the Environmental Protection Agency, a study of costs and administrative support needed for implementation of transportation controls under the Clean Air Act was initiated in the Denver, Colorado, metropolitan area.

At the direction of Congress, a study to determine the potential for alternate use of abandoned railroad rights-of-way was launched. The findings will form the basis of a report to Congress as required by the Railroad Revitalization and Regulatory Reform Act of 1976.

Other environmental research during fiscal year 1976 included — a study of the effect of urban structure on automobile ownership and work-trip mode choice; a study of policies to ameliorate the adverse impacts of transportation facilities on adjacent impact zones; a report on parking management policies for achieving reductions in air pollution; and several studies concerning transportation of the handicapped and elderly.

Handicapped and Elderly

The Office of the Secretary worked with the Urban Mass Transportation Administration on the development of a plan for monitoring regulations for transportation of the physically handicapped and elderly in mass transit. Work also continued with the Federal Aviation Administration on the development of safety criteria for the transportation of physically handicapped individuals in civil air carriers.

The Department of Transportation and the Department of Health, Education, and Welfare jointly sponsored three workshops dealing with transportation for the elderly and handicapped. The Department of Transportation also sponsored research on elimination of travel barriers for the elderly and handicapped. A study was initiated to explore the feasibility and potential benefits of consolidation or coordination of existing transportation services for the handicapped and for elderly recipients of health and social services.

55 mph Speed Limit

The 55 mph national maximum speed limit was passed on January 2, 1974, primarily as a fuel conservation measure. While gasoline consumption does decrease with lower driving speeds, a major benefit of the speed limit law was a significant reduction in highway fatalities. In 1974, highway deaths dropped by almost 9,000 compared to 1973. This was the largest drop in highway

fatalities since 1942, and about half the drop was attributed to lower speeds.

Given the major safety and energy conservation benefits of the 55 mph speed limit, the Department conducts a vigorous program to foster state enforcement efforts and to encourage voluntary compliance by motorists. This program consists of a speed monitoring program (conducted by the Federal Highway Administration), technical assistance to law enforcement agencies (provided by the National Highway Traffic Safety Administration), and a national advertising campaign (designed to alter driver attitudes with respect to high driving speeds).

Highway Beautification

The Office of the Secretary maintains an ongoing review of the highway beautification program, working closely with the Federal Highway Administration. During the year, all federal regulations and policies on highway beautification were reviewed in an effort to give the states a freer hand in the implementation of programs to control outdoor advertising and junkyards.

Historic Preservation

Historic preservation activities during the year included preparation and completion of a survey of transportation historic sites which are not in the National Register of Historic Places, continuing liaison with the Advisory Council on Historic Preservation, and representation on the Lowell Historic Canal District Commission.

Air and Water Quality

To enhance and clarify relationships, policies, and objectives, the Environmental Protection Agency and the Department of Transportation signed an agreement on transportation and water quality planning. Meetings were held to initiate a similar agreement on transportation and air quality.

Consumer Affairs

During the year, the Department began implementation of its consumer representation plan. Under the plan, all elements of the Department were to improve their procedures for responding to consumer needs and concerns and for soliciting consumer opinions.

Since citizen involvement in the development of rules and regulations is essential, all Departmental components have been directed to make the widest practical use of the advance notice of proposed rule making, to allow sufficient time for public comment (a minimum of 45 days), and to evaluate consumer comments carefully before final regulations and standards are published. In addition, the Department is continuing to require citizen participation in transportation planning at the state and local levels as a condition of many federal transportation grant and assistance programs.

To enable consumers to participate knowledgeably, the Department also encourages dissemination of information about transportation issues, including:

- Educational materials to help students become more effective transportation consumers, and, ultimately, more knowledgeable participants in transportation planning; and
- Informational materials on subjects of consumer interest, such as the purchase of cars, drinking and driving, the use of seat belts, safe boating, and dealing with motor vehicle emergencies.

Transportation Facilitation

The Department is trying to simplify transport and trade documentation and to apply automated data processing and communications technology to the interchange of cargo data. During fiscal year 1976, a thorough review was made of the complex problems inherent in the development of an integrated data interchange system. As a result, a decision was made to direct a concentrated effort at the most difficult problem areas, especially the development of uniform commodity codes.

The Department also increased its participation in international programs for simplification of documentation, most notably those of the Economic Commission for Europe. The objective was to strengthen U.S. representation at international conferences on this subject, to assure more effective participation wherever U.S. interests might be affected, and to provide improved interagency coordination and liaison with industry.

The program for the development of passenger and pedestrian oriented symbol signs proceeded into its second phase, testing of the basic group of symbols and development of the additional symbols which are needed to complete the system.

Another program concerns the provision of practical assistance to travelers. As a basis for developing specific measures, a research study was initiated to identify the difficulties most frequently encountered by travelers at major transportation terminals in the Washington area.

During the year, the Department gave increased attention to interagency coordination in connection with both domestic and international facilitation mat-

ters. Domestically, it maintained its leadership of the Interagency Committee on Intermodal Cargo, which is concerned with improving regulatory and operating conditions for the intermodal movement of goods. In the international field, it strengthened procedures for interagency coordination in connection with U.S. participation in the facilitation programs of such major international organizations as the Economic Commission for Europe, the International Civil Aviation Organization, and the Intergovernmental Maritime Consultative Organization.

Deepwater Ports

Applications were received to construct two deepwater ports in the Gulf of Mexico. The Department is responsible for reviewing these applications and for coordinating the proposals with numerous federal and state agencies. It also has primary responsibility for antitrust review of the applications.

The antitrust review began when the applications were received and involved file searches at the offices of the two applicants and their 15 affiliate companies. These documents were catalogued at the Federal Trade Commission for review by that agency, by the Justice Department, and by the Department of Transportation. Application materials responding to requirements listed in the Deepwater Port Regulations were reviewed by the Department and transferred to charts and graphs for review purposes. In addition, the Department's Transportation Systems Center began to formulate a pipeline model in order to project potential antitrust implications resulting from the existence of these ports.

Transportation Security

Hijacking and acts of sabotage continued to be a threat to the safety and security of air passengers. Airline and airport security measures were further tightened, and the Department continued to review aviation security to ensure that the safety measures were equal to the threat.

The Department's cargo security activities, formalized in January 1975 by Executive Order 11836, were reported to the President on March 31, 1976. This was the first annual report required by the executive order. Highlights included the fact that the airlines were making good progress in reducing air cargo theft losses and that the motor carriers were showing a gradual trend of improvement; however, the railroads were still reporting an increase in theft. Data on maritime cargo losses were not available. In view of the progress made, the Secretary recommended that the program continue through March 1977.

The Department's cargo security activities have been based on promoting a voluntary effort on the part of industry. The Department's primary role has been in promoting theft prevention as highly cost effective. The key motivator has been profit, but with the possibility of eventual regulation if industry response is not sufficient. Implementation has been concentrated in 15 major metropolitan areas, with the effort in each area being headed by an official appointed by the Secretary. This unique concept is attractive to the private sector and has begun to produce measurable results.

Minority Businesses

In July 1976, the Department was host to more than 250 representatives of minority businesses in a conference designed to establish better communication between the businessmen and Departmental officials.

The minority share of contracts awarded in the highway and mass transportation construction programs increased from $34 million in fiscal year 1975 to $90.7 million in fiscal year 1976.

Equal Employment Opportunity

Total minority employment in the Office of the Secretary declined from 502 on June 30, 1975 to 495 on June 30, 1976. Total female employment also declined, from 584 to 582. However, the total number of employees in the Office of the Secretary declined from 1447 to 1397 during the same period.

Administration

The internal management of the Department was significantly improved during the year. About 900 of the Department's senior officials were trained in seminars concerned with all aspects of the Department's work; and hundreds of others were trained in specialties relating to their assignments. Personnel management reviews were conducted in the Office of the Secretary and in the Urban Mass Transportation Administration; and several other operating elements of the Department were assisted in improving their personnel systems. A study was also underway of the feasibility of a single consolidated departmental personnel management information system.

In light of the upward trend in collective bargaining activities, the Department refined existing and developed new training courses for managers and supervisors in labor-management relations. Extensive advice and assistance were also provided to the Transportation Systems Center in connection with its efforts to reorg-

anize, improve its skills mix, and conduct a reduction in force.

Also during the year, the Comptroller General approved the design of two of the Department's major accounting systems — the systems of the Federal Railroad Administration and the Transportation Systems Center.

The transportation research activities information system was reviewed for effectiveness and recommendations for improvements were made and implemented. The automatic data processing systems of the Materials Transportation Bureau were studied and improvements and management consolidations were made. An order was published providing departmental guidance and policy for future development of automatic data processing systems. The Department was able to save about $2 million during the period by institution of procedures to obtain prompt payment discounts on its consolidated computer time sharing contracts. In addition, an order was issued to provide guidance in the evaluation and utilization of word processing equipment and systems.

Several significant security and investigations policy directives were published, including policies on departmental transportation investigations, departmental personnel, departmental employees carrying dangerous weapons aboard commercial aircraft, control of national security information, automatic data processing security, and the Privacy Act of 1974. Six field evaluations were conducted to monitor compliance with departmental investigation and security requirements; and allegations of criminal conduct involving departmental employees and programs were investigated. The investigations resulted in several convictions for bribery and kickbacks, and the imprisonment of one departmental employee.

A total of 216 internal audit reports were issued, involving all the Department's major elements and covering a wide variety of programs. Potential savings of as much as $3,545,000 could accrue to the Department as a result of audits completed during the period. The audit results also influenced legislative proposals to improve departmental programs and management procedures.

Examples of new procedures and controls instituted to improve management and thereby increase the effectiveness of the audit operation itself include:

- Combining the functions of two staff offices into a new Operations Division to improve coordination within the audit organization and to provide a more effective control point for responding to management's needs; and
- Increasing use of the "pilot audit" concept to reduce total audit survey time and to increase effectiveness by using one office to develop detailed programs which may then be used by other audit offices.

The Office of the Secretary arranged programs for about 340 official visitors concerned with some aspect of transportation and monitored departmental preparation for and participation in about 80 international meetings. The Office of the Secretary also coordinated the various "bicentennial" activities of the operating administrations.

Among the principal management analysis activities completed during the year were:

- The Trans-Alaska Pipeline System Welding Defects Sampling Plan;
- The Federal Highway Administration and Urban Mass Transportation Administration Consolidation Study;
- The Northeast Corridor Project Implementation Study;
- The Research, Development, Test, and Evaluation Centers Study; and
- Two paperwork reduction studies.

The latter studies resulted in a 12 percent reduction in the number of public use reports required by the Department.

In logistics management, the Department emphasized support of minority business enterprises. It raised the level of contract awards to minorities from $54 million to $138 million. The Department also participated in various interagency groups that considered policy and adopted procedures in logistics and facility development.

Finally, the Office of the Secretary developed delegations of authority and other documents required for implementing significant new legislation, including the Railroad Revitalization and Regulatory Reform Act, the Airway and Airport Development Act, the 1976 Federal-aid Highway Act, and the Energy Policy and Conservation Act.

United States Coast Guard

The United States Coast Guard operates a fleet of 250 cutters, 160 aircraft, and more than 2,000 boats. It also maintains more than 45,000 navigation aids and ensures the safety of the merchant marine, recreational boaters, and many of the nation's bridges. In addition, the entire U.S. icebreaking fleet is operated by the Coast Guard.

The missions of the Coast Guard are carried out by 36,755 military and 6,484 civilian personnel. The regular members of the Coast Guard are supported by the 21,000 member Coast Guard Reserve and by 47,000 civilian volunteers in the Coast Guard Auxiliary.

The Coast Guard last year responded to 90,000 calls for assistance. Approximately 5,000 people were rescued from life threatening situations and more than 185,000 people were aided in other ways. The estimated value of the property which was saved exceeded $365 million.

International Affairs

A high point of the year for the Coast Guard was the excellent progress made in the Intergovernmental Maritime Consultative Organization in the areas of maritime safety and marine environmental protection, with Coast Guard experts playing key roles in nearly every U.S. delegation. Of particular note was the establishment of a subcommittee on bulk chemicals, chaired by a Coast Guard representative.

While the Coast Guard provided assistance to Colombia and Ecuador in containing the effects of a large oil spill and assisted Bermuda in establishing a boating safety program, it also provided on the job training to foreign nationals from all over the world and served as host and escort for Queen Elizabeth's visit to several ports on the Atlantic Seaboard.

Coast Guard officials represented the Department on the National Security Council Interagency Task Force on the Law of the Sea and served as members of the U.S. delegation to the 4th and 5th substantive sessions of the Law of the Sea Conference.

International Ice Patrol

The Coast Guard began the 64th season of the international ice patrol on March 18, 1976. The patrol, which was developed to protect North Atlantic shipping from iceberg hazards during the spring and early summer, is operated by the U.S. under an international agreement. The costs of the patrol are borne by the 20 signatory nations whose ships traverse the area.

The patrol utilizes C-130 aircraft and an oceanographic vessel to check iceberg conditions. Predictions as to the areas of iceberg danger, recommendations as to the best action to take to avoid such danger, and scientific data concerning both the oceanography of the area and the life cycle of the icebergs encountered are major products of this service. The 1976 season was moderately light with an estimated 151 icebergs drifting south of 48 degrees north latitude. The primary reason for the light season was the predominately easterly wind which drove a large number of icebergs out of the main core of the Labrador current. The season ended on July 22, 1976.

Ice Operations

Ice operations are conducted in support of national defense, to assist commerce, in furtherance of scientific research, and for the protection of lives and property, including flood control. The operations are carried out in the polar regions under interagency agreements and in domestic waters as a result of the Department of Transportation's responsibility to facilitate transportation.

Coast Guard icebreakers continued to operate in the Arctic, in the Antarctic, and in the domestic waters of the U.S. For the second consecutive year, Coast Guard icebreakers, augmented by Coast Guard multipurpose vessels, succeeded in keeping the Great Lakes open for navigation throughout the winter. Also on the Great Lakes, the Coast Guard participated, with the National Aeronautics and Space Administration and the National Oceanic and Atmospheric Administration, in a demonstration of an all-weather ice information system which provided almost instantaneous ice information to icebreakers and commercial shipping.

In the eastern Arctic, one icebreaker was deployed to assist the annual resupplying of U.S. installations in Greenland, and another icebreaker provided scientific support deep inside the winter ice in Baffin Bay for

defense related oceanographic and acoustic research. Two icebreakers were deployed to the western Arctic to conduct ecological, oceanographic, and defense related scientific research in the Bering, Chukchi, and Beaufort Seas and to provide assistance in the resupplying of defense installations and of the oil fields on the North Slope of Alaska. Due to the worst ice conditions encountered in the western Arctic in the past 80 years, an additional icebreaker and two ice-strengthened cutters were deployed to assist the North Slope operation. Two icebreakers were also deployed in the Antarctic for five months to support the National Science Foundation's research program.

Aids to Navigation

The Coast Guard is responsible for authorizing, establishing, and maintaining aids to navigation to support our nation's maritime commerce. These responsibilities are carried out by operating and maintaining an aids to navigation system consisting of day beacons, radio beacons, unlighted and lighted buoys, minor lights, manned lights and lightships, long range navigation stations, and large navigational buoys.

This year's efforts, beyond operating and maintaining the present system, were dedicated to improving and modernizing aids, resources, and management techniques.

Increased maritime traffic, larger and faster commercial vessels, and legal decisions were the major factors in starting a long term project to upgrade the positioning of aids to navigation. The initial phase of this project will verify the charted position of various aids and the objects used to position them. Determining the best means of positioning for each individual aid will also be done in this phase. The second phase will investigate new techniques and equipment to position aids to navigation more precisely than is presently possible.

To increase the reliability of aids to navigation while decreasing the resources required to maintain them, a two-phase program has been in operation. Small highly mobile teams called aids to navigation teams have been established to accomplish work previously assigned to larger and more costly buoy tenders. These teams have allowed the seagoing buoy tender fleet to be reduced. Those buoy tenders retained are being renovated to extend their useful life. During 1976, eight aids to navigation teams were established, eight buoy tenders decommissioned, and two buoy tenders renovated, resulting in substantial savings.

Under the Department's national navigation plan annex of July 1974, the Coast Guard is constructing twelve Loran C stations in the United States and is assisting Canada in constructing one station on their West Coast. These stations, once completed, along with five existing stations on the East Coast and three in Alaska, will provide Loran C coverage to the Great Lakes and to the coastal confluence zone of the United States.

The first phase, Loran C service to the West Coast and the Gulf of Alaska, is nearing completion. All of these stations are scheduled for operation in fiscal year 1977. The second phase, Loran C service to the Gulf of Mexico and improvements to the East Coast Loran C service, began in fiscal year 1976. This phase should be completed by July 1978. Once the user community adapts to Loran C, Loran A service will be discontinued.

Law Enforcement

As the primary maritime law enforcement agency of the United States, the Coast Guard conducts operations (both independently and in conjunction with other federal, state, and local law enforcement agencies) to prevent, detect, and suppress violations of federal laws on waters and vessels subject to the jurisdiction of the United States.

During the year, the Coast Guard directed or participated in anti-smuggling operations which resulted in the seizure of 22 vessels and of contraband, primarily drugs and other dangerous substances, with a market value of over $98.1 million.

Nineteen foreign vessels were seized for fishing within United States territorial waters or the contiguous fisheries zone. Eighteen were released after paying penalties totaling $4,901,156 and one was forfeited. An additional 20 foreign fishing vessels were seized for violating the prohibition on taking United States continental shelf fishery resources; all were released after paying penalties totaling $1,985,832. Three fisheries violation cases were pending federal court action at the close of the year.

Six Japanese vessels were found in violation of a treaty which prohibits their taking salmon and halibut in certain areas of the North Pacific Ocean and the Bering Sea. These vessels, along with substantiating reports and evidence, were turned over to Japanese authorities for prosecution, in accordance with the treaty provisions.

Military Readiness

The Coast Guard's readiness for control by and cooperation with the Department of Defense in national emergencies has been improved through active participation in the worldwide military command and control

system. More than 200 combat and combat support units (including about 150 ships) now submit the standard status and location reports which are applicable to all U.S. military forces.

Commercial Vessel Safety

An expanding search for new energy sources and the means of transporting them, a greater recognition of the need for safety and environmental protection measures related to marine casualties and occupational and health hazards, and a heavy emphasis on regulatory reform all had a significant impact on the commercial vessel safety program.

While the traditional safety mission was being accomplished, greater emphasis was given to marine casualty investigations in order to obtain better corrective and preventive action.

Regulatory reform projects were undertaken which either removed or revised existing regulations or procedures. These projects saved substantial time and an estimated $36 million for the public and the marine industry.

Environmental and safety regulations were published to further implement Title II of the Ports and Waterways Safety Act. These regulations govern the construction, equipment, and operation of U.S. tankers in domestic trade to control operational pollution and pollution resulting from marine casualties. Other important safety regulations were published. They included regulations to implement an Intergovernmental Maritime Consultative Organization resolution concerning the construction and equipment of tank ships to reduce fire hazards as well as additional regulations related to the carriage of dangerous bulk cargo, load lines, manning, the carriage of bulk grain, personnel, firefighting equipment, lifesaving equipment, and marine engineering, among others.

Initiatives were undertaken related to the search for and carriage of new sources of energy. The Coast Guard is working to develop a memorandum of understanding with the U.S. Geological Survey and is also working with the National Offshore Operations Industry Advisory Committee in order to deal effectively with the increasing numbers of mobile offshore drilling units. Safety analysis of the carriage of liquefied gases is leading to expanded regulations to control the unusual hazards involved with their carriage by water. This analysis has already resulted in significant Coast Guard input in the published international code for gas ships.

Standards related to marine occupational safety and health hazards are being evaluated as well. Increased emphasis on the handling of hazardous materials resulted in the publication of several safety manuals. One was issued to cover the handling of flammable and combustible liquids and other hazardous products, another was specifically directed to vinyl chloride, a third to liquefied natural gases, and a fourth to precautions and hazards associated with entering cargo tanks.

Increasing overseas activity resulted in the establishment of a Marine Inspection Office in Rotterdam, Netherlands, to serve the North Sea – European area and the assignment of two U.S. Coast Guard inspectors in Japan.

The Coast Guard has noted a trend toward establishing floating industrial or industrial related plants. A floating platform for processing crude oil for transhipment is under review. Additional concepts such as thermal energy conversion are also being considered.

The Coast Guard has continued active participation in the safety activities of the Intergovernmental Maritime Consultative Organization. It has assisted in the development of improved international standards for lifesaving apparatus, stability, subdivision, hazardous goods, pollution prevention, and other design and equipment criteria involving traditional ship types as well as innovative vessels such as hydrofoils, drilling vessels, and liquefied natural gas carriers.

Boating Safety

The boating safety program is part of a national effort to reduce fatalities, injuries, and property damage among the 9 million boats and 51 million people who go boating annually. A grant program is administered to state boating authorities to encourage greater boating safety activity at the state and local level. All but two jurisdictions (Alaska and American Samoa) participated in this program in fiscal year 1976. Grants awarded during the year totaled $6.89 million.

During the year, the Coast Guard monitored 120 recall campaigns undertaken by various manufacturers to correct potential hazards to safety or to modify boats which failed to comply with applicable federal safety standards. At the close of the year, 99 campaigns remained open, potentially affecting 130,000 units.

Eighty-three boats suspected of failure to comply with applicable federal safety standards were selected for testing by an independent testing facility under contract to the Coast Guard. Test results available at the end of the year indicated that 13 boats failed to meet one or more of the applicable safety standards.

Twelve boating safety regulations or modifications to existing regulations were under development during the year. The National Boating Safety Advisory Council actively participated in this regulatory process. Progress was made in the development of three important new regulations, one requiring boats under 20 feet

to float level when swamped and the other two markedly improving fire and explosion protection for larger boats.

The boating safety program was greatly aided by the support of the Coast Guard Auxiliary, an all volunteer civilian organization of over 47,000 experienced boat operators, licensed aircraft pilots, and communicators. During the year, the Auxiliary conducted boating safety courses for approximately one-half million people and made courtesy examinations of more than 400,000 boats. It was credited with saving more than 700 lives, assisting over 34,000 people, and saving property valued at more than $110 million.

Port Safety and Security

The Coast Guard continued its efforts to improve vessel traffic management in U.S. ports and waterways. In February 1976, a contract was awarded to acquire five high-resolution harbor surveillance radars, to be installed in the ports of New York, Galveston, and Valdez. Another contract was awarded for the acquisition of the major electronic system components for a vessel traffic service for New Orleans. Contracts were also awarded for computer components for vessel traffic services at Houston – Galveston and at New York.

Progress continued in the field of navigation safety. The Coast Guard drafted a legislative proposal to authorize the modernization and unification of the navigation rules applicable to waters subject to the jurisdiction of the United States. With the continued assistance of the Rules of the Road Advisory Committee, work has continued in refining the actual navigation rules which would be authorized under this legislative proposal.

The Coast Guard continued the development of regulations to protect vessels and structures on or near the navigable waters of the United States from damage, destruction, or loss. Emphasis was placed on improving vessel navigation by developing minimum operating, equipment, and testing standards.

Offshore navigation safety also became a cause for concern. As outer continental shelf oil and gas development expands, a crowded sea surface looms as a distinct possibility. Because of overlapping jurisdictions (Coast Guard for traffic separation schemes and other routing measures, Army Corps of Engineers for shipping safety fairways, and Bureau of Land Management for actual oil and gas lease permits) careful liaison and coordination are essential to preserve safe navigation in the coastal confluence zone.

Environmental Protection

The first instance when a penalty was assessed for an oil pollution violation detected by all-weather day-night airborne remote sensing equipment happened during fiscal year 1976. The violation was detected by a Coast Guard aircraft in heavy fog off the coast of California. The vessel was inspected upon arrival in port and sufficient substantiating evidence was acquired to establish guilt and to assess a civil penalty.

The testing and evaluation of forensic analysis equipment for oil fingerprinting was completed during the year, and field laboratories were distributed to six major ports.

The Environmental Protection Agency published a notice of proposed rulemaking under the Federal Water Pollution Control Act on December 30, 1975, designating certain substances as hazardous. In preparation for the final designations of these hazardous substances, the Coast Guard began developing pollution prevention regulations similar to those for oil pollution prevention.

Several oil pollution regulations were published during the year. These regulations affect notification procedures for oil and hazardous substance discharges, procedures for the removal of a discharge of oil, and costs that may be imposed or reimbursed for the removal of a discharge of oil or hazardous substance.

The Environmental Protection Agency revised their standard of performance for marine sanitary devices on January 29, 1976. This change will allow the discharge of treated effluent into most U.S. waters. The Coast Guard published an amendment to their regulations, on April 12, 1976, to implement the change in the standard.

Deepwater Ports

The Coast Guard deepwater port project developed regulations for licensing, design, construction, equipment, and operation of deepwater ports. The regulations were published on November 10, 1975.

On December 31, 1975, applications were received from LOOP, Inc. and SEADOCK, Inc. for licenses to own, construct, and operate deepwater ports off the coasts of Louisiana and Texas, respectively.

The Governor of Florida, in February 1976, requested that Florida be designated an adjacent coastal state. Such a designation would give the Governor veto power over the granting of a license to own, construct, and operate a deepwater port. Pursuant to recommendations from the National Oceanic and Atmospheric Administration and the Coast Guard, Florida's request was denied by the Secretary on March 25, 1976.

Public hearings on the LOOP, Inc. and the SEADOCK, Inc. applications and their respective draft environmental impact statements were held in New

Orleans, Louisiana, and Freeport, Texas, on May 25 and 27, 1976, respectively.

On December 18, 1975, the Coast Guard forwarded to the Secretary of Transportation, for submission to the Senate, the first report to Congress on activities relating to the Deepwater Port Act of 1974, covering fiscal year 1975.

Obstructive Bridges

Two orders to alter obstructive bridges, pursuant to the Truman-Hobbs Act, were issued in fiscal year 1976. The bridges affected were the Illinois Central Gulf Railroad bridge across the Illinois River at Pearl, Illinois, and the Chicago, Milwaukee, St. Paul and Pacific Railroad Company bridge across the Upper Mississippi River at Hastings, Minnesota.

During the year, construction began on three obstructive bridge projects — the Union Pacific Railroad Company bridge across the Columbia River at Kennewick, Washington; the Seaboard Coast Line Railroad Company bridge across the Savannah River at Savannah, Georgia; and the Seaboard Coast Line Railroad Company bridge across the Caloosahatchee River at Tice, Florida.

Ship Construction

The 400-foot icebreaker *Polar Star* (WAGB-10) was delivered to the Coast Guard on December 28, 1975, and placed in commission on January 17, 1976.

Construction continued on the 400-foot icebreaker *Polar Sea* (WAGB-11). Construction was 95 percent complete as of September 1, 1976, and delivery was scheduled for January 1977.

The 160-foot buoy tender *Pamlico* (WLIC-800) was delivered on June 4, 1976, and placed in commission on August 11, 1976.

Construction also continued on the 160-foot buoy tender *Hudson* (WLIC-801). Construction was 95 percent complete as of September 30, 1976. The launching occurred on May 29, 1976, and delivery was scheduled for October 1976. The keel was laid for the 160-foot buoy tender *Kennebec* (WLIC-802) on January 9, 1976. Launching was scheduled for December 1976 and delivery was scheduled for April 1977. Construction was 60 percent complete as of September 30, 1976.

Boat Construction

Thirty-seven 41-foot utility boats were constructed at the Coast Guard Yard, Curtis Bay, Maryland, during fiscal year 1976. A total of eighty-nine boats have been delivered throughout the Coast Guard to replace the aging 40-foot utility boat fleet. Construction will continue at a thirty boat per year rate through fiscal year 1980.

On August 8, 1975, a contract was awarded for construction of thirty-one 32-foot ports and waterways boats (32' PWB). The first boat was delivered to the Port Safety Station, Portland, Oregon, on June 28, 1976. A total of ten boats have been delivered to various port safety stations throughout the United States. On September 21, 1976, a contract was awarded to build an additional ten boats of this type. The 32' PWB is designed for use in harbors and connecting waterways by port safety stations and captains of the port for such duties as patrol, surveillance, pollution abatement, and firefighting. Of fiberglass construction, these twin propeller boats are capable of speeds in excess of twenty knots and are equipped with a firefighting system capable of delivering water and foam at a rate of 500 gpm at 200 psi.

On August 6, 1976, trials were completed on an all aluminum 63-foot aids to navigation boat (modified) (63' ANB(MOD)). The boat was delivered by the contractor to the Coast Guard Base, Buffalo, New York, on August 22, 1976, for prototype evaluation. This boat is designed to lift and service buoys weighing up to 4000 lbs and is being evaluated as a potential replacement for the aging classes of 45-foot to 52-foot buoy boats. Manned by a crew of four, the 63' ANB(MOD) is capable of speeds in excess of 18 knots and is capable of carrying loads of up to eight tons.

Shore Construction

The objective of the shore construction program is to provide adequate facilities to support the Coast Guard's operational missions, personnel, and equipment.

In fiscal year 1976, project funds in the amount of $63 million were obligated, or approximately twice the amount obligated in fiscal year 1975. The total included contracts for 31 major projects totaling $40 million. Included in these were — West Coast Gulf of Alaska Loran-C, $20.4 million; Arcata Air Station, $3 million; Destin Station, $1.4 million; Seattle Pier 36/37, $1.3 million; Elizabeth City Aviation Training Facility and Logistics Management Complex, $3.4 million; Kodiak Support Center, $4.4 million; and Yorktown Classroom Building, $1.7 million. Survey and design funds in the amount of $1.5 million, in support of future year projects, were also obligated. A value engineering analysis has been undertaken to examine past Coast Guard performance in construction and renovation programs.

A new communications station was completed at Portsmouth, Virginia. This station provides communications coverage in the Atlantic maritime region. It

duplicates, in the Atlantic area, the function of the communications station at San Francisco, which serves the Pacific area. The new station replaces old radio stations at Washington, D.C., and Pungo, Virginia.

Aircraft Procurement

Due to the long lead time required for the procurement of aircraft and aircraft systems, a study was undertaken to determine the remaining economic service life of the HH-52A helicopter. The results of this study indicate that it is no longer cost effective to continue to operate this fifteen year old aircraft and that procurement of a replacement short range rescue helicopter should begin as soon as possible.

Technical specifications were completed and requests for proposals were issued for a medium range fixed-wing search aircraft to replace the aging HU-16E fleet. Twelve proposals were received and were evaluated for compliance with the published specifications. Seven proposals were determined to be responsive and a request for bids was initiated.

Wing fatigue problems with the HU-16E's require that a maximum operational life of 11,000 flight hours be placed on them. Since several of the operational HU-16E's are nearing this 11,000 hour mark and because the replacement aircraft is not expected to be operational until 36 months after contract award, an interim aircraft was required. A study of available surplus Department of Defense aircraft resulted in a decision to reactivate seventeen U.S. Air Force Convair C-131A twin engine transports. These aircraft are now undergoing depot maintenance and avionics modification.

Research and Development

The objectives of Coast Guard research and development are to apply the benefits of marine science and technology to Coast Guard missions and responsibilities, to ensure more effective operations at reduced cost, to improve service to the public, and to support Departmental objectives.

Marine environmental protection goals accomplished during the year include — fabrication and testing of two fast-current oil recovery devices; development of sensors utilizing infrared and ultra-violet radiation and capable of detecting oil on water under nearly all conditions; successful development and testing of a high speed surface delivery system for pollution response equipment; and updating and improvement of the chemical hazard response information system, which provides data on the hazards of particular chemicals.

Of considerable significance was the completion of preproduction specifications for a five-sensor airborne system capable of detecting oil and other pollutants on the water under all weather conditions. In addition, the system will be able to document evidence of fishing violations, to map leads in the ice at sea, and to serve other mission areas.

In vessel traffic and navigation systems, work was completed on discrepancy buoy development while efforts continued in fast-water buoy testing, in the development of solar power buoy battery packages, and in the development of techniques for improved buoy placement. Work with Loran-C resulted in the development of a cigarette-package size receiver with computerized waypoint navigator for airborne use and the installation of a Loran-C mini-chain to cover the St. Mary's River between Lakes Superior and Huron, where position accuracies within twenty-five feet were demonstrated.

In recreational boating safety, efforts continued in the examination of the effects of environmental stress on boat operator performance. Development of requirements for lightweight boats was completed when appropriate Coast Guard standards, endorsed by the National Boating Safety Advisory Council, were proposed.

In marine safety activities, the Coast Guard conducted cloud plume and burning tests of liquefied natural gas and continued to collect relevant data to facilitate the development of proper safety requirements for liquefied natural gas. In addition, an intermodal container safety study and a pumproom explosion suppression test were completed. Considerable progress was made in utilizing risk management techniques to analyze commercial vessel safety regulations, and work continued in the development of improved firefighting techniques and equipment.

In support of search and rescue, research and testing was completed on a new airborne radar specifically adapted to the Coast Guard's needs. Specifications were completed for a prototype wide area illumination system for helicopters; and research was completed on hydrofoil craft, demonstrating their effectiveness in the Coast Guard's law enforcement and search and rescue missions.

In energy conservation and alternative energy sources research, efforts continued in the area of fuel-water emulsions, where prototype emulsifiers utilizing cavitation techniques appear to have a high potential for use in diesel engines, bringing about a reduction in fuel consumption and exhaust pollutants.

Coast Guard Reserve

During the year, the Coast Guard Reserve continued to make a contribution to the peacetime missions of the

active service, while preparing for responsibilities in the event of war or national emergency. As a component of the nation's military reserve, the Coast Guard Reserve's primary mission is to provide trained units and individuals to supplement active duty forces in responding to threats to the national security. The principal means of preparing for this mission is augmentation training. This training mode involves reservists in the peacetime missions of the active Coast Guard during normal operations and provides a force to assist during peak periods and domestic emergencies. Reservists have an opportunity to receive actual hands-on experience, while the active service benefits from the availability of additional manpower to carry out assigned tasks. Approximately 65 percent of available reserve training time is presently devoted to augmentation training. This level provides over 3 million manhours of support each year to the performance of statutory missions. This dual role (preparation for wartime responsibilities by performing peacetime missions) makes the 11,700 members of the Coast Guard's drilling reserve a highly cost-effective element within the total personnel complement.

Civil Rights

Approximately 12,500 military personnel, civilian managers, and supervisors received training in the Coast Guard's human relations program during fiscal year 1976. Additionally, more than 200 military and civilian supervisors at headquarters completed a 2-1/2 day equal employment opportunity awareness training seminar.

Federal women's program and Spanish speaking program activities were accelerated during the year. November was designated "Women in the Coast Guard Month" in observance of International Women's Year. A highlight of the observance was an address to about 275 managers, supervisors, and employees on career development for women. The Coast Guard chalked up a probable first with its successful program, "English as a Second Language", developed and implemented at the Coast Guard Supply Center, Brooklyn, New York, for the benefit of Spanish and Tagalog speaking personnel.

Servicewide, more than 2,000 employees were enrolled in some type of developmental training during the year. Some 200 others were engaged in upward mobility activities which led to promotions or to reassignments with promotion potential.

During the year, the Coast Guard conducted six on-site evaluations of civilian equal employment opportunity programs and eighteen on-site evaluations of military equal employment opportunity programs. Additionally, twenty-eight contract compliance reviews of construction contractors, forty reviews of supply contractors, and fifty-six reviews of organizations and activities receiving federal financial assistance were conducted.

Occupational Safety and Health

During fiscal year 1976, a hazard identification and abatement program was implemented. This program is providing the Coast Guard with a system for establishing abatement priorities and a method of determining abatement cost. Also, the Coast Guard began the planning necessary for developing an expanded occupational health program.

The occupational safety and health program continues to place emphasis on job safety training in an attempt to further reduce the accident rate. Occupational safety and health standards were promulgated and a project was initiated to assimilate and integrate these standards into various Coast Guard management systems.

The Coast Guard's internal health services support program continued the trend toward greater selftionsuffic in providing health care to its personnel. The use of physician's assistants and dental therapists was expanded in order to broaden the range of care available. Improved clinics were incorporated into new construction projects and a servicewide program for replacement of aging major medical equipment was put into effect. The availability of federal employee health units to Coast Guard civil service employees was expanded, and emergency medical technician training for search and rescue crews improved the Coast Guard's capability for providing emergency medical services to persons rescued at sea.

Federal Aviation Administration

The Federal Aviation Administration (FAA), under the statutory charter of the Federal Aviation Act of 1958 (as amended), regulates as well as fosters civil aviation.

In discharging this dual mission, FAA takes care of a variety of responsibilities. They include — (1) regulating air commerce so as to best promote safety; (2) fostering the development of civil aeronautics both at home and abroad; (3) controlling the national airspace to ensure its safe and efficient use; (4) developing and operating a common system of air navigation and air traffic control for both civil and military aviation; (5) promoting the development of an effective national airport system; (6) regulating airport safety; and (7) ensuring aviation's compatibility with the environment.

Aviation Safety

FAA's basic mission is aviation safety. A variety of methods are used in carrying out this mission, including certification, regulation, training, and inspection.

Certification. Certifications are issued in two categories — pilots and nonpilots. The pilot category includes student, private, commercial, airline transport, helicopter, flight instructor, glider, and "other" pilots; the nonpilot category includes mechanics, parachute riggers, ground instructors, dispatchers, control tower operators, flight navigators, and flight engineers. As of June 30, 1976, 741,887 persons were certificated in the pilot category and 329,645 in the nonpilot category.

Aircraft Certification. During the year, approximately 75 new airplane and helicopter models were type certificated and supplemental type certificates were issued for 1,438 more. Also certificated were 63 engine models, 20 propeller models, 4 balloon models, 3 glider models, and 470 amateur-built aircraft.

In other certification activities, FAA:

- Screened approximately 1,650 surplus military aircraft (under a continuing FAA and Department of Defense program to determine the civil airworthiness potential of surplus military aircraft prior to their sale to the public by the Department of Defense) and found 63 percent of the aircraft inspected to have a good civil certification potential.
- Conducted approximately 544 industry audits, in accordance with the requirements of the quality assurance system's analysis review program.
- Issued an airworthiness directive, on July 7, 1975, requiring that by December 31, 1977, the floors in crew and passenger areas in the DC-10, the L-1011, and the B-747 be and strengthened to withstand in-
edfli adepressurization caused by the sudden opening of a large hole in the lower compartment.
- Emphasized repair station certification and surveillance through issuance of several airworthiness directives in response to National Transportation Safety Board recommendations. A major item of interest was the special certification of repair stations authorized to conduct critical nondestructive inspections of Beech 18 aircraft wing spars.

Airport Certification. The Federal Aviation Act of 1958 required the establishment of standards for airport operations and facilities for those airports that serve air carriers certificated by the CAB. This program was accomplished by issuing one certificate for the airports that serve the scheduled large aircraft operations of the scheduled carriers and a separate certificate for those that serve only the unscheduled large aircraft operations or the scheduled or unscheduled small aircraft operations of the certificated carriers. As of September 30, 1976, there were 906 certificated airports in the country — 519 serving scheduled aircraft operations, and 397 serving unscheduled operations.

The Mechanic Safety Program. As in previous years, FAA continued its program to upgrade the skills and training of the nation's aviation mechanics and to honor them for their indispensable role in aviation safety. It did so by:

- Cosponsoring, with the Aviation Safety Foundation of the Aircraft Owners and Pilots Association, eight refresher clinics for aviation mechanics.
- Preparing presentations on how to keep proper maintenance records, conduct aviation inspections, comply with airworthiness directives, and perform similar tasks aviation mechanics are required to master. (The presentations were to be given to mechanics at FAA field offices and at meetings, clinics, and seminars conducted by schools, state aeronautical conventions, professional maintenance organizations, and similar organizations.)
- Honoring, for the 13th year, the two mechanics in

the nation who were judged to have made the greatest contribution to aviation safety during the preceding year. The two winners were Laverne L. Gondles, an aviation mechanic at the American Airlines maintenance center at Tulsa, Oklahoma, and William A. Enk, a general aviation mechanic and owner of his own aircraft sales and service business at Blue Springs, Missouri.

The Regulatory Review Programs. The regulatory review programs, which were intended to keep the Federal Aviation Regulations in step with technological changes, began in early 1974 with the first biennial airworthiness review program. An operations review program was added the following year.

During fiscal year 1976, a new regulatory review program was started. The new program provides more frequent reviews of specifically defined regulatory issues. A review under this new program usually considers issues relating to limited portions of the regulations. The new process enables the FAA, through open discussions with the interested public, to issue notices of proposed rulemaking proposing relatively precise sets of rules. It also facilitates the resolution of issues that are complex and controversial.

Activity during the year in the three review programs was as follows:

- The eighth and final notice of proposed rulemaking based on proposals submitted during the airworthiness review conference was published on July 11, 1975. An amendment reflecting action on another notice of proposed rulemaking was issued in February 1976. As the year ended, the drafting of additional amendments was nearing completion.
- A notice, published in February 1975, announcing an operations review conference, elicited some 1,600 proposals for changes to the regulations. In late May, the agency sent out a three-volume compilation containing 904 of these proposals. The conference was held in December, and notices of proposed rulemaking covering the proposals discussed at the conference were being developed as the year ended.
- The new regulatory review process was launched near the end of the year with the announcement of a Federal Aviation Regulation Part 135 regulatory review. The conference associated with this review was scheduled for November 1976.

Flight Inspection. The results of a great deal of careful planning and preparation were realized during the year with completion of the flight inspection modernization program. As the year began, the flight inspection organization had attained its planned configuration of seven field offices reporting to a headquarters at Oklahoma City. Delivery of the remaining jets which were needed to modernize the flight inspection fleet was completed in February 1976. By the end of September, most of the old DC-3s had been retired. Also, a Boeing C-135 military type aircraft was replaced by a used Boeing B-727 for long-distance overwater flight inspection in the North Atlantic and Caribbean areas. Another used Boeing B-727 was obtained to replace a slower Lockheed Electra for flight inspection in the Pacific areas.

Air Transportation of Hazardous Materials. As a result of the Transportation Safety Act of 1974, a new Materials Transportation Bureau was established within the Department, and authority for regulation of hazardous materials was transferred from the various administrations to the new bureau.

On July 1, 1976, the principal provisions of the FAA hazardous materials regulations were incorporated into the regulations of the Materials Transportation Bureau. This change required some immediate changes in FAA's hazardous materials regulatory practices. For example, the written procedures prescribed for its inspectors in conducting hazardous materials inspections were revised, and the guidance provided to air carriers and air taxi operators for carrying on their own hazardous materials training programs was amended.

Other significant activities in this area during the year included — the completion by 193 FAA inspectors of the Transportation Safety Institute's basic 56-hour hazardous materials training course; the continuation by FAA regional coordinators of their hazardous materials presentations; and the furnishing of speakers and panel members for the Department's intermodal hazardous materials seminars.

Aviation Security. FAA's civil aviation security program is administered by 261 people located at 33 air transportation security field offices, 11 regional offices, and Washington headquarters.

The following were among the more important events affecting aviation security during the year:

- The explosion of a high-intensity bomb in a line of coin-operated lockers at LaGuardia Airport on December 27, 1975. The explosion killed 11, injured 54, and did extensive structural damage. Measures taken by FAA, following the explosion, included the issuance of advisory circulars; the acceleration of research efforts to develop automatic equipment capable of detecting explosives in lockers, cargo holds, and baggage compartments; and the issuance of regulations requiring inspection of checked baggage. In addition, the explosive detection K-9 team program was increased from 20 to 24 teams and was to be further increased as soon as additional dogs and handlers became available.
- The successful hijacking, on September 10, 1976, of a TWA jetliner by five Croatian Nationalist sympathiz-

ers. Shortly after the flight left New York, the hijackers threatened to blow up the plane with harmless but extremely realistic looking "bombs." The "bombs" had been put together from an assortment of innocent objects which they had brought aboard on their persons and in their carry-on luggage. This subterfuge had been undertaken because the hijackers, after months of studying LaGuardia screening procedures, were satisfied that there was no way they could bring real weapons aboard and that their only chance of a successful hijacking was to improvise bogus ones. This was the first successful hijacking of a scheduled U.S. air carrier in more than 45 months. The hijackers, however, eventually surrendered.

- The continued success of the preboarding weapons screening program. During the first half of 1976, 2,840 firearms were detected and prevented from being taken aboard; 1,833 persons were referred to law enforcement officials for violations of the law; and more than 20 attempts at what were clearly intended to be hijackings were disrupted before the weapons with which they were to be accomplished could be brought aboard.
- The issuance of new security regulations applicable to foreign air carriers operating large aircraft to and from the United States in scheduled passenger operations. Under these regulations, certain foreign carriers were required to conduct a security program which, among other things, would ensure that all passengers and property brought aboard their planes were screened by effective weapons detection devices prior to boarding.

Other Safety Developments. In addition to the foregoing safety developments, FAA:

- Established an Office of Aviation Safety to advise the Administrator on aviation safety. The principal function of the new office is to provide a continuing overview of aviation safety developments likely to be of help in improving aviation safety and to bring them to the Administrator's attention. However, it is also charged with managing and monitoring specific safety programs which have an interface with other agencies, notably the National Aeronautics and Space Administration and the National Transportation Safety Board.
- Initiated a program to provide breakable support structures for approach light systems. The objective of the program is to minimize damage to aircraft accidentally coming in contact with approach lighting equipment.
- Issued an amendment to the Federal Aviation Regulations permitting the use of contact lenses in lieu of glasses for the correction of distant vision.

The 1975 Safety Record. As reported by the National Transportation Safety Board, the calendar year 1975 safety record for U.S. air carriers was the best in recent years. For general aviation, the record not only showed improvement over the year before, but in at least one important respect was also the best in years.

In 1975, U.S. air carriers had 42 *total* accidents as compared to 47 in 1974 — 33 for the certificated carriers; 2 for the supplemental (charter) carriers; and 7 for the commercial operators of large aircraft. Only three *fatal* air carrier accidents occurred in 1975, down from 9 in 1974 — the fewest fatal accidents since 1949. Only 124 fatalities occurred in these accidents, as compared with 467 in 1974. This was the lowest number of fatalities since 1957, when 98 fatalities occurred.

In *scheduled domestic and international passenger* service, the certificated air carriers had 27 accidents in 1975, as compared to 42 in 1974, and two fatal accidents, as compared to seven in 1974. This was reflected in a drop in total passenger fatalities from 420 in 1974 to 113 in 1975 and a decrease in the passenger fatality rate per 100 million passenger miles from 0.197 in 1974 to 0.070 in 1975.

One commercial operator accounted for the two total fatalities in the *commercial* category during the year, while the passenger operations of the *supplemental* carriers had just one accident in 1975 and no *fatal* accidents for the fifth consecutive year.

In *general aviation*, a category that includes air taxi operators, commercial operators of small aircraft, and other noncarrier aircraft, there were 4,575 total accidents during 1975 compared to 4,425 in 1974, the second year in a row that total accidents increased. However, *fatal* accidents decreased from 729 in 1974 to 662 in 1975; fatalities decreased from 1,438 to 1,324; and the fatal accident rate per 100,000 miles flown decreased from 2.24 in 1974 to 2.01 in 1975, the lowest recorded fatal accident rate for general aviation operators since 1946.

Air Traffic Control

Air Traffic Activity. The level of air traffic activity during the period from July 1, 1975, through June 30, 1976, was, in general, somewhat higher than the year before. The air route traffic control centers handled 23.92 million aircraft flying under instrument flight rules, exceeding the fiscal year 1975 total by 1.4 percent. In terminal areas, the airport traffic control towers handled 62.49 million takeoffs and landings, 6 percent more than the year before. Instrument operations at the towers were up from 26.06 million to 28.09 million, an increase of 8 percent. Total flight services at the flight service stations came to 58,104,673, an increase of 0.6% from the year before.

Air Traffic Control System Modernization. FAA's program to modernize the equipment at the 20 air route

traffic control centers in the contiguous United States and to install automated radar systems at 63 of the nation's busiest terminals was completed during the year. In addition, a ground-based conflict alert system was in operation at all 20 air route traffic control centers; and contracts were awarded for further improvements at 63 of the busiest terminals.

The program to install less complex automated radar systems at 71 lower density airports slipped somewhat during the period. Originally scheduled to begin operating in 1976, the systems were rescheduled for operational use in 1977.

Performance Measuring System. A performance measuring system was implemented at 24 major airports during the period. By comparing actual hourly runway operations against hourly runway capacity standards, the system provided an overall daily assessment of air traffic control performance. It made it possible not only to determine how well the air traffic control system performed during busy hours but also to identify ways to further improve performance.

Pilot – Controller Glossary. A joint air traffic control and flight standards task force prepared a pilot – controller glossary that defined over 600 key words and phrases in common use by pilots and controllers in air traffic operations. The purpose was to make sure that pilots and controllers shared a common understanding of what these words meant. The glossary was given wide distribution. It was incorporated into FAA's air traffic control and flight services handbooks; and it was added to the May 1, 1976, issue of Part I of the Airman's Information Manual. This issue was given a large printing and all 700,000 of the nation's medically certificated pilots were informed in a personal letter from the Administrator of its one-time free availability. More than half of the eligible pilots asked for and received the publication.

Local Flow Management. During the year, FAA, in concert with the air carriers and the air carrier organizations, worked out a standard arrival system for turbojets. Under the system, which was to be put into use first at Stapleton International Airport at Denver and then implemented all over the country by 1978, turbojet aircraft, upon arrival and while waiting to land, would be kept at their most efficient cruise altitude, from which they would make a safe and easy idle thrust descent to the ILS glide slope intercept. The new system's advantages were obvious. It would standardize the descent profile and eliminate terminal area saturation by making it possible to meter the arrivals at a volume which the airport could handle without the need for excessive speed reduction and low altitude vectoring. It would also enhance safety over the terminal, save jet fuel, reduce noise pollution by reducing the need for power-on landings, and provide safety and efficiency by reducing the amount of time flown by the turbojets at lower altitudes, where they are more wasteful of fuel and where the danger of collisions with uncontrolled aircraft is greater.

Upgrading the Air Traffic Control System. In addition to modernizing the existing air traffic control system, FAA was working to upgrade the system so that it would be capable of meeting the requirements of the 1980's and beyond.

Significant developments occurred in this effort in the following areas:

- *Increased Automation.* The emphasis in automation was on developing improved computer programs (software). In addition to the introduction of the conflict alert system at all 20 domestic air route traffic control centers, new features under development for center use included — (1) flight profile generation; (2) sector clearance planning; (3) en route metering; (4) automatic clearance; (5) delivery timing; (6) improved aircraft tracking; and (7) conflict resolution. The development of a minimum safe altitude warning system for terminal areas was completed during the year and the system was put into use for the first time. Other new features under development for terminal automation included conflict alert, basic metering and spacing, and all-digital displays for satellite tower cabs. In addition, action was initiated during the year for the development of a central flow control program, which would substantially improve the utilization and operating efficiency of the nation's airports and airways.
- *Discrete Beacon Address System.* Progress was made during the period in the development of an improved radar beacon surveillance system. Significant accomplishments included the awarding of a contract for three engineering models of discrete beacon address system intermittent positive control sensors for installation and testing and the development of the intermittent positive control algorithms in controlled flight tests. This system would help provide en route pilots with the information needed to locate nearby aircraft, give them peremptory warning of the danger of imminent collision, and issue pilot collision avoidance commands on an "as needed" basis. The system is being developed as an adjunct to the discrete beacon address system to provide a ground-based collision avoidance capability.
- *Collision Avoidance System.* FAA completed testing three independent airborne collision avoidance systems. After analyzing all separation assurance alternatives, the agency chose as the most feasible the beacon collision avoidance system. This system was chosen because of its affinity with the existing air traffic control radar beacon system and its high level of transponder implementation. Two versions of the beacon collision avoid-

ance system were put under development during the period — one would have the capability of interrogating aircraft and processing their replies independently of the ground air traffic control system; the other would be dependent on a ground based surveillance and interrogation capability.

- *Wake Vortex Advisory System.* A prototype wake vortex advisory system went into operation at Chicago's O'Hare International Airport. Early findings indicated that the system could both predict wake vortices and give assurance of their absence, making it possible for the controllers to safely reduce the separation distances of landing aircraft. As a result of these findings, action was taken to put the experimental system at O'Hare on an operational basis and to begin the installation of systems at other airports.
- *Microwave Landing System.* Development of the microwave landing system, a key element of the upgraded air traffic control system, reached an advanced stage. The system uses a time reference scanning beam technique to make possible the precise, flexible, and reliable landing guidance required for an upgraded air traffic control system. Development contracts for four prototype microwave landing systems were awarded in July 1975. The time reference scanning beam system was submitted to the International Civil Aviation Organization in December 1975 as the U.S. candidate for international landing system standardization, and the first prototype was received in May 1976. Field testing began at once and was proceeding as the year ended.
- *Flight Service Station Modernization.* The Washington flight service station was relocated to the air route traffic control center at Leesburg, Virginia, in February 1976, as the initial step in the establishment of a fully automated prototype flight service station hub collocated with an air route traffic control center. Under a contract awarded the month before, a new automated service (similar to the system which had been under test at the Atlanta Flight Service Station since the previous July) was to be installed at Leesburg in early 1977. The functions of the Richmond and Charlottesville flight service stations would then be combined with the Leesburg station, to demonstrate the feasibility of consolidating several manual flight service stations into a single automated station.
- *Human Factors.* In addition to the foregoing, FAA initiated a long range planning project, looking toward a better integration of the technical and human aspects of the air traffic control system. This project is expected to bring about substantial changes in the way the air traffic control task is performed. The first phase of the project (recommendations for policy and program changes in the air traffic control system) was to be completed in 1977, with final implementation due by 1980.

Fostering Domestic Aviation

The Airport and Airway Development Act Amendments of 1976, amending the Airport and Airway Development Act of 1970, were signed into law on July 12, 1976. Changes brought about by these amendments included:

- Establishing commuter service airports, a new class of air carrier airport not served by carriers certificated by the Civil Aeronautics Board.
- Extending eligibility for programing under the airport development aid program to snow removal equipment, to noise suppression equipment, to construction of physical barriers to reduce aircraft noise, to land acquisition to ensure noise compatibility, and to certain types of terminal area development at airports serving air carriers certificated by the Civil Aeronautics Board.
- Empowering the Secretary of Transportation to approve demonstration grants to not more than four states for the administration of grants for general aviation airport development.
- Authorizing $1,275,000 to be appropriated from the trust fund to assist states in developing their own general aviation airport development standards, except for runway approach clearance standards.
- Authorizing $1.1 billion to be appropriated from the trust fund for the maintenance of airway facilities through fiscal year 1980.

The Airport Development Aid Program. Obligations under the airport development aid program amounted to $417.5 million. New grant agreements included 335 projects at air carrier airports (including 34 projects at commuter service airports) and 190 projects at general aviation airports (including 29 projects at reliever airports).

The Planning Grant Program. When Congress passed the Airport and Airway Development Act of 1970, it authorized a funding level for the planning grant program of $75 million for a ten-year period. The Airport and Airway Development Act Amendments of 1976 increased this authorization to $150 million. In August 1976, Congress appropriated $15 million for use during the remainder of the transitional quarter and during fiscal year 1977. During fiscal year 1976 and the transitional quarter, 118 grants for $5,828,067 were issued under the program.

The National Airport System Plan. At the end of the year, the existing national airport system plan (as submitted to Congress in 1972 in accordance with the requirements of the Airport and Airway Development Act of 1970 and periodically updated since) included over 4,000 locations, of which 649 were served by certificated air carriers. In keeping with the requirements of the Airport and Airway Development Act Amendments of 1976, which called for the publication

of a major revision of the national airport system plan by January 1, 1978, preparation was begun in July 1976 for such a revision. By the end of September, a data input form had been designed and a study had begun to determine the computer requirements needed to prepare the desired revision.

Protecting the Environment. FAA's environmental protection activities during the year included:

- Approving 16 environmental impact statements and 658 negative declarations in airport development actions.
- Completing an analysis of options which would enable all jet aircraft to meet the noise standards prescribed in the Federal Aviation Regulations. The analysis considered both modification of existing aircraft and their replacement with new aircraft.
- Issuing a proposed rule to lower permitted noise levels for all transport-category aircraft and for turbojet aircraft regardless of category. These new limitations would reflect the state of the art in noise reduction technology.
- Putting strong emphasis on the improvement of requirements and procedures for the environmental assessment of proposed airport actions. An FAA order, "Instructions for Processing Airport Development Actions Affecting the Environment," which was issued during the period, was intended to bring about desirable changes in the environmental review process.
- Amending the operating specifications of Air France and British Airways (under the direction of the Secretary of Transportation) to permit limited commercial flights of the Concorde supersonic transport into the United States for a trial period of 16 months. Working with the National Aeronautics and Space Administration, the Environmental Protection Agency, and the Office of the Secretary, FAA developed plans and procedures for noise, sonic boom, and low altitude pollution monitoring of the Concorde in order to determine the environmental impact of these operations during the trial period. Various types of noise and emission monitoring equipment were installed at Dulles International Airport and surrounding communities for this purpose. Most of the equipment was in operation when Concorde service to Dulles began on May 24, 1976, and the data was publicly reported. The final report will compare the measured environmental impacts to the estimated environmental impacts published in the environmental impact statement governing the matter.

Energy Conservation. The Energy Policy and Conservation Act, which was signed into law on December 22, 1975, laid out new policy directions for the conservation and more efficient use of the nation's energy resources. The Act called for a 10 percent increase in fuel efficiency in aviation over 1972, and required that FAA report to Congress how the goal was to be achieved. FAA answered with two reports. In the first, it detailed the fuel savings already achieved. In the second, it listed the options open to it and to the aviation industry for further savings. These included, among others, revised climb and descent profiles, improved fuel advisory departure procedures, and the use of wake vortex avoidance system information in landing operations. All the options were being pursued as the year ended.

Aircraft Loan Guarantee Program. During the year, FAA guaranteed 12 loans totalling $115.2 million to eight small certificated air carriers for the purchase of aircraft required to improve the efficiency of their operations and the quality of their service to the public.

International Aviation Activities

Participation in International Organizations. FAA participates in the activities of the International Civil Aviation Organization (ICAO), using it as a major forum for presenting U.S. views on air transportation and navigation matters to the world. During the year, FAA participated in 21 ICAO meetings, in the course of which it involved itself in the defense of U.S. positions worked out by the Interagency Group on International Navigation. Especially significant among the meetings attended by FAA was a special ICAO panel convened to review the operational requirements for facilities and services provided under joint financing agreements in the North Atlantic area.

International Negotiations and Agreements. Among the more significant international negotiations and agreements in which FAA was involved were the following:

- The United States and Brazil concluded a bilateral airworthiness agreement for the reciprocal acceptance of each other's civil aircraft products.
- The Department of State, assisted by FAA, embarked on negotiations with France and the United Kingdom which led to a Tripartite Agreement among the three signatories providing for the monitoring of ozone levels in the stratosphere. The agreement also provided for such further cooperation among the signatories as would ensure that the ozone layer at the high levels flown by supersonic transports was not degraded by aircraft engine emissions.
- In order to support the Secretary in fulfilling his responsibilities under the International Air Transportation Fair Competitive Practices Act of 1974, FAA kept under constant review the aviation user charges in effect in countries served by U.S. air carriers in their international operations. This FAA activity included participation in intergovernmental aviation user charge

discussions and negotiations.

Technical Assistance and Training. During the year, FAA had available approximately $7 million for its foreign technical assistance and training programs, reimbursable from the Department of State's Agency for International Development, the Department of Defense's military sales program, and the individual foreign countries concerned. The Department of Defense sponsored three FAA technicians in Iran and four in China. Assistance groups dispatched to Korea, Venezuela, Kuwait, and Oman were financed by those countries. As the year ended, there were six FAA aviation assistance groups abroad with a total authorized staff of 14.

In addition to providing full-time resident groups, FAA dispatched 49 technicians in various aviation specialties on short-term assignments to 17 different countries. The Law Enforcement Assistance Agency paid for 8; the Agency for International Development for 5; the International Civil Aviation Organization for 3; the Department of Defense and the World Bank for one each. The remaining 31 were funded by the countries concerned.

FAA also trained 423 individuals from 64 countries in various aviation specialties. The International Civil Aviation Organization reimbursed the agency for 117; the Agency for International Development for 36; the Law Enforcement Assistance Agency for 16; and the foreign governments concerned for the remaining 254.

Also under reimbursable agreements, FAA continued to provide flight inspection services to foreign governments, thereby helping to assure the safety of international air carriers operating in those countries. A total of 23 foreign governments requested and were given this type of assistance.

Aviation War Risk Insurance. Under the Federal Aviation Act, the Department of Transportation Act, and a delegation of authority from the Secretary of Transportation, FAA operates an aviation war risk insurance program. As of September 30, 1976, total contingent liability under the war risk insurance program was $55,946,399,000, covering 288 aircraft under contract to the Department of Defense or otherwise committed to the civil reserve air fleet. One claim for damages incurred during the military action in Southeast Asia in 1975 remains unsettled. This claim is not expected to exceed $43,000. No new losses were reported during fiscal year 1976.

Administration

Personnel and Budget. To carry out the agency's responsibilities from July 2, 1975, to September 30, 1976, $2,876,400,000 was appropriated by Congress and 58,033 full-time permanent positions were authorized. The agency's operations appropriation totalled $1,977,900,000, and six other appropriations made up the balance. They included the airports grants-in-aid appropriation; the facilities and equipment appropriation; the research, engineering, and development appropriation; the facilities, engineering, and development appropriation; and the operations and maintenance and the construction appropriations for the two federally owned metropolitan Washington airports.

Organizational Changes. Five important organizational changes occurred in FAA during the year. They were as follows — (1) the Office of Associate Administrator for Airports was abolished; (2) the Airports Service was renamed the Office of Airport Programs; (3) the Office of the Associate Administrator for Aviation Safety was abolished; (4) the Office of Aviation Safety was established; and (5) the Metropolitan Washington Airports Service, the FAA headquarters service in charge of Washington National and Dulles International Airports, was renamed Metropolitan Washington Airports and made an FAA field element rather than a headquarters organization.

Management Improvements. Significant management improvements during the year included:

- A further reduction in processing time for major FAA procurements. Processing time, which had dropped from 265 days to 205 days per procurement during the previous fiscal year, was down to 185 days per procurement as of September 30, 1976 — an improvement of more than 30 percent when compared to fiscal year 1974.
- The completion of the conceptual and functional design of an upgraded FAA-wide uniform accounting system. By the end of the year, a contractor had worked out the detailed design of the general accounting system and the general design of the cost accounting system and had begun development work on the property accounting system.
- The completion of the accounting requirements documentation for a uniform payroll system specifically tailored to FAA's needs. The system is to be developed and installed FAA-wide by December 1979.

Labor Relations. As of September 30, 1976, FAA recognized nine different labor unions. The nine unions represented more than 36,000 of its employees. Of that number, 18,000 were on dues withholding and 28,000 were covered by labor agreements. The 36,000 figure, 5,500 more than the year before, reflected an increase of more than 15 percent in the number of FAA employees represented by unions.

In April 1976, a nationwide bargaining unit of some 7,700 FAA Airway Facilities Service employees

selected as their exclusive representative the Federal Aviation Science and Technological Association, a National Association of Government Employees organization. However, an objection by the American Federation of Government Employees delayed the Federal Aviation Science and Technological Association certification for several months. The objection was dismissed by the Department of Labor, which supervises such elections, and the Federal Aviation Science and Technological Association was certified as the exclusive representative of the employees.

A new labor agreement with the Professional Air Traffic Controllers Organization, covering its 17,800 members, was concluded just as the fiscal year began. Approximately 2,750 grievances were filed under the agreement during the year — more than three times the total of the previous year.

Renegotiation of the labor agreement with the National Association of Air Traffic Specialists, covering some 3,700 employees in FAA's flight service stations (which had been in progress as the fiscal year began) was delayed for months by an unsuccessful National Association of Government Employees challenge for the right to be their exclusive representative. As the year ended, FAA and the National Association of Air Traffic Specialists were close to agreement in the negotiations that the challenge had interrupted.

Civil Rights and Equal Employment Opportunity. The more notable accomplishments in civil rights and equal employment opportunity during the year were:

- Achieving an employment level in FAA of 6,221 (10.5%) minority and 7,760 (13.1%) female employees out of a total of 59,064. This was an increase from 5,365 (9.3%) minority and 7,064 (12.2%) female employees the year before, when total employment was 57,676.
- Increasing total full-time employment of Hispanic Americans in the agency from the previous fiscal year figure of 1,224 to 1,372.
- Increasing minority business concessions at airports across the nation from 47 in fiscal year 1975 to 60 at the end of this year.
- Promoting FAA contract awards to minority-owned firms by awarding them 310 contracts (under the Small Business Administration's program) totaling $19.5 million and 117 contracts and purchase orders totaling $2.5 million (under the regular procurement program) for a total of $22 million. This was an increase of 17 percent over fiscal year 1975 when awards to minority firms totaled $18.7 million. Total contracts amounted to $190.2 million in fiscal year 1975 and 266.4 million in fiscal year 1976.

Training Program Developments. Significant developments in FAA's employee training programs during the year included:

- Launching a new standardized training program for newly hired en route and terminal air traffic controller trainees that combines training at the FAA Academy and at field facilities with a scientifically based screening process at the Academy stage of the training. The program calls for two weeks of field facility indoctrination, 15 weeks of qualification training at the Academy (during which the trainees are carefully observed and screened), and final facility training for those who pass the screening and satisfactorily complete the Academy course. A total of 1,053 new trainees entered Academy training under this program in the 9-month period from January 1 through September 30, 1976. Forty-four (including 12 who withdrew) failed to graduate; and the remaining 1,009, who did graduate, went on to final facility training.
- Expanding FAA's nationwide after-hours college opportunity program. Under this program, FAA employees can attend nearby colleges after hours, and airway facilities personnel can take college training programs leading to bachelor of science degrees in engineering, as well as preparing for and taking engineer-in-training exams qualifying them for the professional engineer certificate. During the period, 334 FAA employees were enrolled in 56 colleges under the program; and 56 graduated.
- Continuing for the fourth year the air traffic controller second career training program. Of the 1,336 individuals who had entered the program since September 1972, when it first began, 231 had successfully completed their second career training and 731 were in training status at the end of the year.

Federal Highway Administration

The primary responsibilities of the Federal Highway Administration (FHWA) are to administer the federal-aid highway assistance program, as authorized by Congress, in cooperation with the states; to enforce federal safety standards relating to interstate motor carriers and the highway transport of hazardous materials; and to provide technical and management assistance to other federal agencies and organizations involved in roadbuilding activities. To accomplish these missions, FHWA employs 4,814 people, 70 percent of whom are located in field offices working directly with state and local governments and other recipients of these programs.

Federal-Aid Highway Program

The federal-aid highway program continues to be a major contributor to safety and mobility on our nation's street and highway systems. During fiscal year 1976, over $6.4 billion in federal funds were obligated by the states for various purposes, including planning, engineering, right-of-way acquisition, reconstruction and replacement of existing highways and bridges, and traffic control improvements, as well as new highway construction.

Over 40 percent, approximately $2.6 billion, of the total went toward improvements on the interstate system. During the year, 964 more miles of interstate highway were opened to traffic, bringing the total mileage now in use up to 37,869 miles, or 89.1 percent of the planned 42,500 mile system. However, a substantial portion of the mileage already open to traffic needs additional improvement, and many complex and costly projects must be completed on the remaining 11 percent not yet opened to traffic before the interstate system achieves full utilization.

Of the roughly $3.8 billion obligated for projects not on the interstate system, over $1.0 billion went specifically for safety improvements to existing streets and highways. Another $1.1 billion went for projects in urban areas, with much of the activity aimed at street construction, traffic control measures, and transit and carpool related improvements to alleviate congestion. A major portion of the $1.3 billion obligated for rural projects went for improvements to the primary and secondary systems to preserve the accessibility and mobility of the country's rural and small town population.

Other activities funded in cooperation with or through the states included:

- Over $105 million in financial assistance to state and local agencies for both statewide and urban transportation planning.
- Emergency relief funds in the amount of $145 million for the repair or reconstruction of roads and bridges seriously damaged by natural disasters or catastrophic failures. These funds were used for emergency assistance in 22 states, including repairs necessitated by the failure of the Teton Dam in Idaho, the flash flooding in Big Thompson Canyon in Colorado, and the six-state rampage of hurricane Eloise. Technical assistance was also provided to the Federal Disaster Assistance Administration in support of similar repairs to damaged roads and bridges on routes off the federal-aid systems.
- Projects totaling $187 million for development of highways and access roads as part of the Appalachian Regional Development Act program.

Another significant accomplishment during the year was the realignment of the federal-aid systems according to function. This realignment, performed in cooperation with the states, was necessary not only to strike a better balance between program authorization and the needs for the various systems, but also to concentrate more of the available federal funds on those roads and streets considered to be of major federal interest. Total mileage of the systems was reduced by about 115,000 miles. Revised mileage by federal-aid system is as follows: interstate, 42,500 miles; primary, 260,000 miles; secondary, 400,000 miles; and urban, 120,000 miles.

Special Programs

FHWA was also involved during the year in several other programs not administered through the states. They included:

- Providing highway engineering and construction services for other federal agencies, including the Departments of Agriculture and Interior for roads in national forests and public lands. During the year, 135 contracts totaling $72 million were awarded directly by FHWA.

- Continuing construction on several sections of the 250-mile Darien Gap in Panama and Colombia. Design work is essentially complete and several construction projects are underway for the Panama section. In Colombia, the design work is progressing.
- Providing technical assistance to Argentina, Colombia, Costa Rica, Iran, Kuwait, and Panama. An example of the aid given is in Kuwait, where an initial multimillion dollar maintenance and rehabilitation program was basically completed and contract proposals are being prepared for the country's first limited access expressway, estimated to cost $500 million.
- Creating a Northeast Corridor Assistance Project Office to provide engineering and technical assistance to the Federal Railroad Administration in carrying out the responsibilities assigned to the Federal Railroad Administration by the Railroad Revitalization and Regulatory Reform Act of 1976.

Legislation

The Federal-Aid Highway Act of 1976 was signed into law on May 5, 1976. Except for some increases in the interstate and safety construction categories, the Act extends the funding of the existing federal-aid highway program through fiscal year 1978 and at roughly the same levels ($7.6 billion annually). However, the Act did make several changes, the most significant of which were:

- Authorizing funds specifically for the resurfacing, restoration, and rehabilitation of interstate routes which have been in use 5 years or more. Initial authorizations are for $175 million annually, with FHWA to submit a report within a year that includes an estimate of the need for such work on the system.
- Consolidating and expanding federal-aid assistance for improvement of roads not on any federal-aid system. The emphasis of the $275 million in financial aid being made available is on safety improvements, including $75 million specifically for railroad – highway grade crossing protection or elimination.
- Combining several categories of funds and broadening the degree of transferability between certain funds, providing more flexibility to the states in their use.
- Extending the funding for completion of the interstate system through fiscal year 1990 at $3.6 billion annually, and requesting a report on alternate methods for financing its completion.
- Broadening the use of interstate funds to permit substitute highway as well as transit projects in place of withdrawn nonessential interstate routes. Four such interstate withdrawals were approved during the year, removing 26 miles from the interstate system and releasing over $900 million for alternate transportation projects.
- Extending the highway trust fund for 2 more years, to October 1, 1979.
- Amending the Highway Beautification Act of 1965 to allow certain advertising signs to remain (where removal would cause substantial economic hardship), directing a restudy of existing national standards for directional and informational signs, and permitting federal funding for travel information centers and systems.
- Modifying the penalties for a state's failure to implement the national highway safety standards, and providing incentive grants for states that significantly reduce traffic fatalities.
- Establishing a National Transportation Policy Study Commission, composed of Congressional and public members, to study transportation needs and the resources, requirements, and policies of the U.S. to meet such needs. A report by the commission is due by December 31, 1978.
- Revising the timing and method of distributing federal-aid highway funds to conform with the new Congressional budget procedures.

Highway Management

During the year, FHWA continued to encourage those projects which would make best use of the existing transportation network and contribute to the conservation of energy.

In support of local efforts to encourage ride sharing as an alternative to one person per vehicle commuter travel, a package of computer programs known as the commuter information system was developed and is now being tested. The programs combine most of the desirable features of many earlier computer carpool matching programs with the added capability to provide vanpool planning and transit information.

Other FHWA research was also concerned with increasing the efficiency of existing streets and highways. For example, engineering models to detect and give preference to high occupancy vehicles at intersection signals were tested and evaluated in Minneapolis, Minnesota, and Washington, D.C.

During the year, FHWA also encouraged the planning and construction of auto restricted zones to improve the movement of persons in urban areas. In November 1975, each FHWA region was asked to initiate a minimum of two projects. Examples of proposed projects are a downtown pedestrian mall in Pawtucket, Rhode Island, which will use $1.7 million in federal-aid highway funds, and a transit mall in Chicago, which will use $5.0 million in federal-aid highway funds.

During fiscal year 1976, about $253 million was obligated for traffic engineering improvements. Typical projects were for new and improved traffic control devices, turning lanes at intersections, removal of bottlenecks, and other capacity increasing and energy conserving measures.

In 1974, Congress established a national maximum speed limit of 55 mph, requiring the states to enact such a limit and to certify annually that the limit is being enforced or risk losing federal-aid highway funds. The initial certifications were received and analyzed in March 1976. All states were in compliance with the requirements with only some technical deficiencies.

The speed limit has proven to be an effective fuel conservation measure. Estimated savings in highway use of motor fuel in 1975 attributable to speed reduction ranged from 0.8 percent to 2.9 percent of the projected 1975 fuel usage.

Highway Safety

During the year, FHWA named its first associate administrator for safety, to provide a focal point for highway safety activities and to administer specific highway safety programs. The five major highway safety activities administered by FHWA in cooperation with the states are — (1) the categorical safety construction programs; (2) the administration of highway related safety program standards; (3) highway safety research and development; (4) promotion of safety improvements through use of regular federal-aid construction funds; and (5) the upgrading of highway design and operating standards to provide for safer highways.

The categorical safety construction programs separately funded in the federal-aid highway legislation include the high hazard locations program, the program for elimination of roadside obstacles, the pavement marking demonstration program, the safer roads demonstration program, the railroad highway crossings program, and the special bridge replacement program. During the year, the states and territories obligated $484 million for safety improvements from these funds.

Another $23 million of FHWA safety funds were obligated by states, territories, and the Secretary of the Interior (for safety programs on Indian reservations) during fiscal year 1976 for highway related safety programs, including — identification and surveillance of accident locations; highway design, construction, and maintenance; traffic engineering services; and highway related aspects of pedestrian safety. These funds provide "seed" money for the initiation and expansion of state and local highway safety programs. They are program development oriented and do not include highway construction.

For many years, FHWA has encouraged the states to use a portion of their federal-aid construction funds for small safety improvements, generally referred to as the "spot" safety improvement program. This year, the states obligated $838 million for these safety improvements, $290 million of which was for the interstate system.

FHWA devotes a significant portion of its resources to developing safety technology and to establishing and applying effective safety performance standards. Accomplishments in this area during the year included developing and testing recessed reflective markers placed in grooves cut into the pavement and publishing a report, *School Trip Safety and Urban Play Areas*, which resulted in recommendations for specific changes in the *Manual on Uniform Traffic Control Devices for Streets and Highways*.

Since almost all the public agencies and private businesses involved with highway design and operation use published standards and guides in the decisionmaking process, FHWA is very active in updating and developing new standards and guides to incorporate the latest highway safety features, concepts, and practices. This effort is supported by FHWA's research and development program, many national committees, and other committees, such as the National Highway Safety Advisory Committee.

During the year, FHWA worked with the states to improve their management of highway safety programs and their collection and analysis processes. At the end of the year, FHWA, in cooperation with the National Highway Traffic Safety Administration, was making an evaluation of the adequacy and appropriateness of 18 safety program standards.

Motor Carrier Safety

Through its motor carrier regulatory, inspection, and education programs, FHWA has continued its efforts to reduce highway accidents involving commercial trucks and buses.

During the year, a census of motor carriers and hazardous materials shippers was completed, listing all carriers known to be operating in interstate commerce. Motor carrier safety personnel also assisted in the formal training of state police and emergency response personnel in 11 states, as well as participating in hundreds of meetings, seminars, and training courses to familiarize state and local government and industry personnel with the federal motor carrier safety regulations and the hazardous materials regulations. Cooperative enforcement agreements were signed with five

additional state agencies and four more were pending at the end of the year.

During fiscal year 1976, the federal motor carrier noise emission regulations became effective, and a program of inspection and enforcement was begun. Over 14,000 noise measurements were taken, with a steady drop in violations noted as the year progressed.

In the regulatory area, a proposal to amend the hours of service rules for drivers and to establish comparable rules for loaders, helpers, and mechanics was published for comment. Over 500 responses were received from carriers, drivers, and other interested organizations.

A variety of research activities were completed during the year, including one on the braking performance of vehicles and another on the phenomena of stress corrosion cracking in tanks used to transport anhydrous ammonia.

Impacts of Highway Construction

During the year, further progress was made in stimulating environmental awareness during highway location, design, and construction. The interdisciplinary staff of FHWA was enlarged, and training programs for federal and state highway professionals were continued, with some changes in emphasis. During the year, 1-week training courses were given in community involvement, social and economic considerations in highway planning and design, the preparation of environmental impact statements, ecology, and water quality. Attendance at these sessions totaled approximately 1,900.

An important development during the year was the amendment of the National Environmental Policy Act to permit state drafting of environmental impact statements subject to federal review and approval. Also, a decision by the Supreme Court held that only the project proposed for federal action was required to be analyzed in the environmental impact statement, subject to applicable FHWA regulations regarding the length of appropriate segments for environmental analysis. These developments are expected to aid in streamlining the environmental impact statement process.

Emphasis continued on the implementation of environmental action plans by each state highway agency. These plans outline the processes by which highway projects are developed, to assure full consideration of social, economic, and environmental factors. Many states have used the development of their action plans as an opportunity to review and restructure their entire project development process, to ensure environmental sensitivity, and to gain greater public confidence in their programs. Additionally, action plans, beyond their effects on social, economic, and environmental issues, are being used as tools in the overall management of state highway agencies.

FHWA continued to work closely with the Environmental Protection Agency on matters relating to air quality. A major objective of this joint effort during the past year has been improvement of the process by which responsible highway agencies, in cooperation with metropolitan planning organizations, establish a review procedure to assess transportation impacts on air quality. The process also calls for metropolitan planning organizations to determine annually whether their current transportation plans and programs are consistent with the state air quality implementation plans, and for joint FHWA and Environmental Protection Agency review of these annual consistency determinations.

During the year, attention was focused on the technical aspects of air quality studies. This has resulted in increased use of the most current technical data and methods. Work has also been initiated on a new guidance document to establish the basic elements of a technically adequate air quality analysis.

The outdoor advertising control program received increased attention at the federal and state levels. During the year, $18.5 million was obligated by the states and over 58,000 advertising signs were removed from the roadside. This brought the total signs removed under this program to 421,000. Almost all states have expanded their control of outdoor advertising to the limits of visibility along rural interstate and primary highways as required in the Federal-Aid Highway Amendments of 1974.

The federal-aid highway program continued its efforts to provide fair and equitable treatment to people and businesses displaced as the result of highway construction. During the year, a total of 16,579 people, 209 farms, 2,294 businesses, and 104 nonprofit organizations were displaced. Relocation payments for the same period were $49,571,182.

Along with relocation assistance, programs for "in kind" replacement of facilities required for highway construction were continued. Since 1972, FHWA has approved 52 functional replacements of publicly owned facilities, including 15 schools, 18 park or recreation facilities, and seven police or fire facilities. Under the last resort housing program authorized by the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, approximately $7 million has been programed to date for 97 projects in 23 states.

Highway Construction Technology

A nationwide survey on the quality of highway construction was undertaken in 1976. Extensive data were collected during the 1976 construction season as to the

quality levels being achieved in highway pavement and bridge deck construction and with respect to the levels of construction inspection being provided. In addition, performance data were gathered on numerous recently completed projects throughout the country. This data was to be evaluated during the winter and a report published in the spring of 1977.

Research continued on such items as pavement construction, drainage construction, and the environmental impacts of construction operations. One of the principal efforts dealt with advancing techniques for building pavements with adequate skid resistance, primarily through the use of open graded asphalt friction courses. Environmental considerations addressed included soil erosion and sedimentation and noise and air pollution resulting from the operation of construction equipment and plants.

A major emphasis was placed on the promotion of econocrete in pavement construction. Econocrete is made from marginal quality locally available aggregates or from recycled pavements and emphasizes material and energy conservation. About 25 presentations were made to highway agencies and officials on uses of econocrete in subbases and pavement structures. Current results of this effort are 23 econocrete projects completed or underway and many more planned.

Significant steps were taken in converting to the use of metric units in the planning, design, construction, and operation of highways. Specific actions included the initiation of three direct federal highway construction projects to be located, designed, and built in different geographical areas using only metric units of measurement. Also, a revision was begun on the *Manual of Uniform Traffic Control Devices*, with the advice and assistance of the National Advisory Committee, with the objective of issuing a new edition containing metric units of measurement.

Equal Opportunity

Substantial gains were made in increasing the participation of minority business enterprises in the federal-aid highway construction program. In fiscal year 1976, minority firms were awarded over $63 million in federal-aid highway construction contracts and subcontracts, which was more than double the amount of the previous year.

The annual survey of employment on all federal-aid highway projects conducted in July of 1976 indicated that the 21 percent minority participation rate of the previous year remained nearly constant despite a drop in total employment of 7,300. (Actual employment of minorities dropped from 31,116 (20.7%) to 29,823 (21.0%).) During the same period, the number of women employed increased from 2,024 (1.3%) to 2,573 (1.8%). Total employment was 150,036 in fiscal year 1975 and 142,343 in fiscal year 1976. The employment of women increased from 152 to 283 in skilled crafts and from 47 to 96 in the apprenticeship and on the job categories. A special program sponsored by FHWA was the training of 240 women as carpenters, equipment operators, and truck drivers under the skills improvement program, where reimbursement is provided to construction contractors on the basis of each hour of on the job training provided.

The contract compliance review program was continued, with an increase in the quality and quantity of review coverage. By the end of the year, 2,680 such reviews had been completed. Special efforts were also made to implement the section of the Civil Rights Act which forbids discrimination in any program or activity that receives federal financial assistance.

During the year, FHWA increased the number of minority employees in its full time work force from 825 to 888, and the number of women increased from 1,394 to 1,419.

Emphasis on involvement of managers and supervisors in the equal employment opportunity program was highlighted by the completion of a series of awareness seminars begun in fiscal year 1975. Sixteen such seminars were conducted during the year, bringing the total attendance to 300.

Federal Railroad Administration

The Federal Railroad Administration (FRA) has continued its efforts to achieve safe operating and mechanical practices in the railroad industry, through the enforcement of all federal laws and related regulations designed to promote the safety of railroads.

During the year, FRA performed an analysis to determine the trends in train accident causes from January 1965 through March 1976. The areas analyzed were human factors, equipment defects, track defects, and miscellaneous causes.

For the equipment defects category, the percent of train accidents decreased through 1970, but then began increasing. Over the same period, miscellaneous causes continuously decreased, with the greatest decrease occurring between 1975 and 1976 when track and equipment defects were reclassified. This reclassification placed more accidents into the track and equipment defect categories and fewer in miscellaneous causes.

A summary of the results of the analysis relative to the cause of train accidents in calendar year 1975 follows — human factors, 23.1 percent; equipment defects, 23.7 percent; track defects, 39.3 percent; and miscellaneous causes, 13.9 percent. (A general summary of train accidents and casualty data for calendar year 1975 is given in the Appendix.)

Track Inspection

An analysis of the causes of train accidents revealed that most of the accidents caused by track defects were in three categories — geometry, 18.8 percent; rail joint and switch point flaws, 11.0 percent; and rail defects, 7.0 percent. The remaining 2.5 percent were classified as miscellaneous.

FRA has developed an automated track inspection program, using vehicles that have both geometry measuring and rail flaw detection capabilities. The system uses two passenger car size vehicles which operate as a pair. During the year, approximately 24,000 miles of track were inspected. A second set of these vehicles and a third set with expanded capabilities were to be put into operation during fiscal year 1977.

The automated inspection program will improve the effectiveness of inspectors, by providing them with a visible profile of rail geometry conditions and rail defects over long distances.

Concrete ties are presently being tested by several railroads on short stretches of track and are a new area of interest. The stability and durability of the ties are being monitored by FRA.

Motive Power and Equipment

During the year, roadtesting was conducted on five different types of Amtrak passenger locomotives (E-60, ASEA-Swedish, P30, F40, and E8) for the purpose of investigating and correcting potential derailment tendencies.

The tests led to the development of new methods of instrumenting and testing the dynamic responses of locomotives under varying track conditions. As a result of these tests, major modifications were made to several locomotives.

FRA continued to monitor in-service lubrication tests of certain 100-ton capacity hopper cars, which normally run in low speed and low mileage service, on a major coal-hauling railroad. The purpose was to determine whether excess lubrication of the roller bearings on such cars results in above normal operating temperatures which could promote failure of certain bearing components. By the end of the year, 256 cars had been inspected, and no failures attributable to excess lubrication had been found.

Railroad Safety Seminars

FRA, in conjunction with the Railway Labor Executives Association, conducted a series of railway labor safety law seminars at eleven major rail centers. The purpose of the seminars was to inform local labor officials and union members of the existing federal safety laws, of how standards and regulations are developed, and of how such regulations are enforced. A similar series of seminars was conducted for "on the ground" railroad supervisors. The latter seminars were jointly sponsored with the Association of American Railroads and the American Short Line Railroad Association.

Regulations

FRA has worked closely with the Materials Transportation Bureau in rewriting the hazardous materials

regulations as they apply to rail transportation. The rewritten regulations now incorporate provisions which previously appeared in other parts of the federal regulations.

During the past year, several amendments to FRA's safety regulations were either proposed or issued. They included:

- An amendment to the railroad operating rules, issued on March 8, 1976, which established regulations concerning the "blue flag – blue signal" (protection) usage by railroad employees engaged in testing, servicing, inspecting, or repairing rolling stock.
- An amendment relative to telephone reports of certain accidents, which was issued on April 9, 1976, to conform to requirements of the National Transportation Safety Board. The amendment enables the railroads to report such accidents to both federal agencies by a single phone call.
- A request for comments and technical suggestions relative to maintenance of certain rail – highway grade crossing warning devices, which was published on June 28, 1976. New specifications and regulations may eventually result from the comments received. (Data on grade crossing accidents during calendar year 1975 is given in the Appendix.)
- An amendment to the Hours of Service Act was enacted on July 8, 1976, to clarify the intent of certain sections of the Act. A request for suggestions and comments was published by FRA on September 22, 1976, as the first step in preparing appropriate changes to the hours of service regulations.
- An amendment of the civil penalties relative to noncompliance by rail carriers in accident reporting and record keeping procedures, which was issued on July 19, 1976.
- A revision of the railroad safety appliance standards, issued on September 1, 1976, prescribing standards for corner stairways on locomotives engaged in switching service.
- An amendment to the railroad freight car safety standards, issued on September 29, 1976, which changed the requirements for compliance with the initial periodic inspection of certain types of freight cars.

Federal Assistance

State Rail Programs. The Regional Rail Reorganization Act of 1973 and the Railroad Revitalization and Regulatory Reform Act of 1976 provide assistance to states in the Northeast and Midwest region which wish to continue rail freight services when discontinuance or abandonment by rail carrier is proposed. The program began on April 1, 1976, when the Consolidated Rail Corporation started operation and about 7,500 miles of branch lines which were excluded from the Consolidated Rail Corporation became eligible for federal aid. In the 17 states eligible for aid, approximately 3,200 miles of excluded or publicly owned lines began receiving rail service continuation assistance.

The total assistance authorized for the regional program is $180 million. Initially, $25 million was appropriated for fiscal year 1976 and $8.6 million for the transition quarter. Subsequently, supplemental funds were appropriated amounting to $8.75 million for fiscal year 1976 and $6.4 million for the transition quarter. All funds were allocated by a formula based on eligible mileage, with the stipulation that no state receive less than three percent. Funds may be utilized for planning, operating subsidies, rehabilitation and modernization, purchase of rail lines for future need, or substitute transportation service. To assist states in qualifying for the funds, FRA issued regulations governing the regional program on March 5, 1976.

In addition to the regional program, Congress established a nationwide program for local rail service assistance and authorized $360 million for this purpose. On April 1, 1978, the regional assistance program will be terminated and states in the region will become eligible for local rail service assistance under the national program. Proposed regulations governing the national program were issued on August 9, 1976.

To implement rail planning in the states, FRA, in cooperation with the Council of State Governments, sponsored a series of rail planning seminars for representatives of public agencies and other organizations involved in the state rail planning process.

Interim Financial Assistance. The FRA program of interim financial assistance to bankrupt rail carriers in the Midwest and Northeast under the Regional Rail Reorganization Act of 1973, as amended, ended with the beginning of operations of the Consolidated Rail Corporation on April 1, 1976. The program, carried out in cooperation with the United States Railway Association, served to ensure the continuation of essential transportation services by the bankrupt rail carriers until a reorganization plan for the continued operation of their rail facilities could be developed and implemented pursuant to the Act.

Funds were provided to meet the operating cash needs of the bankrupts and to implement agreements for essential maintenance, improvement, and acquisition of assets designated for conveyance to the Consolidated Rail Corporation. Under the final system plan approved by Congress, designated rail assets of the bankrupt carriers were conveyed to the Consolidated Rail Corporation on April 1, 1976.

The funds which were made available by Congress

to ensure the continuation of essential services included $270 million to offset operating cash shortfalls. The FRA Administrator entered into agreements with the trustees of the bankrupt carriers, providing $263.7 million in grant funds for this purpose, including $10.5 million for urgent maintenance of the right-of-way used for passenger service in the northeast corridor. After conveyance, the remaining available grant funds also were applied to northeast corridor maintenance. The Congress made available $300 million for the maintenance, improvement, and acquisition program, against which the Administrator (with the approval of the United States Railway Association) executed agreements with the trustees providing $285 million in funding.

State Safety Programs. Fourteen states, with a total of 34 inspectors, participate in the track and freight car inspection activities of the federal – state rail safety program. Further growth in the program is anticipated as additional railroad safety standards are issued. Expansion of the program continued to be held back by the difficulty many states have experienced in recruiting qualified inspectors.

Regional Directors. To meet its broadened responsibilities to the railroad industry, as recently mandated by Congress, FRA established five positions for regional directors of federal assistance. Three of these posts, in Atlanta, Boston, and Chicago, had been filled by the end of the year. The role of the regional director is to act as liaison between FRA headquarters and the various program directors, the states, regional authorities, cities, other official or unofficial bodies, and the railroad industry in the implementation of federal programs at the regional and local level. In addition to explaining the direction and scope of federal programs, the regional directors are to assist the various interested parties in complying with legal requirements, to participate in an extensive exchange of information between FRA headquarters and the field, and to provide FRA program directors with insight into how their programs actually work in the field.

Historic Preservation. FRA obligated a total of $310,878 to seven cities to preserve historic or architecturally important railroad stations by converting them into intermodal transportation centers or civic and cultural activity centers. The cities and the amounts of the obligations were — Dallas, Texas, $99,000; Boston, Massachusetts, $75,000; Sacramento, California, $74,828; Fullerton, California, $59,550; Baltimore, Maryland, $45,000; Pittsburgh, Pennsylvania, $30,000; and McHenry, Maryland, $2,400. In addition, applications for funding have been received from five other cities seeking to preserve historic stations. They are Albany, New York; Kansas City, Missouri; Nashville, Tennessee; Providence, Rhode Island; and San Antonio, Texas.

Northeast Corridor Program. Progress continued on the northeast corridor development program during fiscal year 1976. Activities centered on engineering studies and on the emergency track improvements needed to restore efficient and reliable train service. The Regional Rail Reorganization Act required the Secretary "to begin the necessary engineering studies and improvements upon enactment." The engineering studies focused on developing a plan to improve high speed rail passenger service in the corridor by the earliest practical date. The improvements, which started immediately, focused on immediate repair of the worst track sections.

In conducting its engineering and general studies under the Act, FRA has collected and analyzed a broad data base which should provide the information needed to establish a balanced and well integrated rail system. The concept engineering and preliminary specifications have been completed for electrification, passenger stations, bridges, private grade crossings, and realignments. Testing for vehicles, tracks, and high speed catenaries has been planned; and general studies (including economic and market analysis of corridor population, traveler characteristics, and ridership projections) have been carried out.

Early in the corridor development analysis, it was recognized that the northeast corridor improvement program could have significant environmental impact. Since this would be the first FRA project to come under the National Environmental Protection Act, it was necessary to develop suitable guidelines and planning procedures. The guidelines and procedures had been prepared by the end of the year, and an environmental assessment of the project was underway.

During the year, a number of urgent steps were taken to upgrade the northeast corridor. On August 5, 1975, a $25 million agreement was reached with Penn Central for improvements in the corridor south of New York. The improvements were needed to restore service that had deteriorated due to Penn Central's deferral of maintenance and the general age of its facilities and equipment. The improvements included resurfacing 24.4 miles of track, cleaning 34 miles of ballast, improving interlockings with 4,776 new switch timbers and 6,462 new crossties, and eliminating rail joint problems with 296 welds and 39 joint renewals. These improvements have forestalled additional slow orders in the system and will keep ride quality and schedule reliability from deteriorating further.

When the corridor ownership changed to Amtrak, a new agreement was completed to continue the emergency improvements. This agreement, which became

effective on August 4, 1976, included a 6.3 million dollar improvement budget.

Eight stations along the corridor were to receive face lifts as a result of a $2.35 million cooperative project between the Department of Transportation and the Department of Commerce. The money was furnished under Title X of the Emergency Jobs and Unemployment Assistance Act of 1974, whose purpose was to provide productive jobs in areas of high unemployment. Stations were being painted, renovated, and restored in Baltimore, Maryland; Wilmington, Delaware; Philadelphia, Pennsylvania; Newark, New Jersey; New Haven, Connecticut; New London, Connecticut; Providence, Rhode Island; and Boston, Massachusetts. Work on the stations was scheduled for completion early in calendar year 1977.

The Railroad Revitalization and Regulatory Reform Act of 1976 set very specific goals for future passenger rail service in the northeast corridor. Within five years, the system must provide intercity passenger train service on a regularly scheduled and dependable basis. In addition, trip-time goals specify a 3 hour and 40 minute schedule between Boston and New York and a 2 hour and 40 minute schedule between New York and Washington, including appropriate intermediate stops. To accomplish these goals, Congress authorized expenditures totaling $1.75 billion, contingent upon the availability of $150 million in state matching funds.

FRA concluded preliminary agreements with the principal contractors for the project — Amtrak; and DeLeuw, Cather/Parsons Associates, who are the architectural and engineering contractors. DeLeuw, Cather/Parsons Associates were to begin work in October 1976 and were to provide engineering, design, and construction management services. Actual construction work was to be contracted, either to Amtrak or to general contractors, depending on the nature of the individual construction tasks. Amtrak was to have a dual role — first, as construction manager of work packages assigned to it; and, secondly, as a system operator responsible for scheduling the operation and maintenance of rail services and coordinating them with construction activities.

During the transition quarter, $20.8 million was obligated to Amtrak as a modification to the earlier agreement. In addition to covering initial mobilization costs, these funds authorized Amtrak to procure flatcars, rails, ties and other critical or long lead time materials.

Policy and Program Developments

Intermodal Freight. During the year, FRA began planning an important new intermodal program. The objective of the program is to increase the efficiency of freight transportation by combining the advantages of the truck for pick up and delivery with the advantages of rail for line haul, thus providing a service level which is at least equal to an all highway operation. Several railroads have been operating "piggyback" service for years, but its growth has leveled off and many of the operations are not truly profitable.

A major part of the intermodal freight program is a demonstration project involving the operation of new intermodal freight service on several intercity routes. The trains will handle trailers and containers exclusively, on expedited schedules, two or more times daily, terminal to terminal, with no yard handling en route. Innovations in marketing and pricing will be stressed to assure a reasonable balance in directional traffic. Experiments in crew assignments, equipment utilization, and improved terminal operations will be conducted also.

The Association of American Railroads has agreed to manage the demonstration project, which will be closely monitored and evaluated over a three-year period in terms of profits to the railroads and benefits to shippers and the public.

Improved Operating Practices. The St. Louis project, currently in its third year of operation, is an attempt by railroad labor and management to work together to enhance railroad productivity and performance. Under the auspices of the Labor/Management Task Force on Terminals, later renamed the Labor/Management Task Force on Rail Transportation, this pilot project has concentrated on experiments in freight terminal operations on the Missouri Pacific Railroad in St. Louis. One important aspect of the project has been that no capital investment was required. Rather, the experiments involved innovative changes in management procedures and in labor agreements.

As of June 1, 1976, 26 experiments had been developed by the project team and had been approved by the task force. Forty-five percent of the experiments dealt with management procedures and 55 percent with labor agreements.

Upon completion of an experiment, final reports are prepared and turned over to the labor and management negotiators. Of the thirteen completed experiments, three have already resulted in permanent changes.

The improvements in performance of the St. Louis terminal are both measurable and significant. For example, the average time a car spent in the terminal decreased by more than four hours, a drop of nearly 25 percent, in a six month period. Improvements were especially noticeable in cross river movements, where average terminal time was reduced by 13.5 hours.

The St. Louis project has proven that railroad labor and management *can* work together to improve operations, increase productivity, and attract new business.

Nationwide Designation of Rail Lines. On February 5, 1976, the Secretary issued a two-volume preliminary report which, for the first time, proposed a nationwide basis for classification and designation of individual rail lines in broad social and economic terms, as distinct from safety aspects of track condition. The study tentatively applied the proposed classification categories to a total of 193,500 route miles of the 58 Class I railroads in the continental United States. These railroads carry 99 percent of the rail freight traffic.

Prepared by FRA, the report is titled *Preliminary Standards, Classification and Designation of Lines of Class I Railroads in the United States.* The standards used were density (including passenger service frequency), service to major markets, appropriate levels of capacity, and national defense requirements. Based on these standards, the report identifies six categories of rail route.

The data indicate that about two-thirds of the total rail freight moved by the Class I railroads is concentrated on only one-fifth of the system and that the lightest density one-third of the network (60,000 route miles) handles only one percent of the total freight.

The proposed classifications and designations in the report were the subject of public hearings and of a review conducted by the Rail Services Planning Office of the Interstate Commerce Commission.

The final report was to be issued by the Department by May 1, 1977. It was to provide essential information for carrying out a number of key provisions of the Railroad Revitalization and Regulatory Reform Act, including merger applications and approval, national and state rail planning, and a forthcoming study of capital needs of the railroads. (The latter study was required to support legislative recommendations to Congress regarding the amount and form of financial assistance, if any, that will be required by the rail industry.) The report also was to combine and interpret hitherto scattered information required by the carriers in planning mergers and other steps in network rationalization.

The Clearinghouse Experiment. The underutilization of freight cars has long been recognized as a major problem facing the railroad industry. One aspect of the car utilization problem that is readily visible is the crosshaul of empties between railroads, especially in periods of car surplus, but also during periods of car shortage when car service rules and directives force more empty movement than is necessary.

The clearinghouse experiment is an effort to alleviate this problem. The experiment began on September 14, 1974, when the Interstate Commerce Commission granted a temporary exemption from car service rules to allow three railroads (Southern, Missouri Pacific, and Milwaukee) to use each others cars as though they were their own. This experiment resulted in a decrease in empty car miles of over 30 percent, in an increase in revenue carloadings of 37 percent, and in a decrease in the load to load cycle of over four days. In the first 12 months, empty car movements were reduced by about five million car miles, which has an economic value of $700,000 at 14 cents per car mile.

The clearinghouse experiment, which is under the direction of the cooperative FRA and American Association of Railroads car utilization program, has now been expanded to ten railroads (which represent over 35 percent of the nation's car fleet and carloadings). Annual car mileage savings of $1.5 million and car day benefits of $1.9 million are anticipated for these ten railroads.

Research and Development

The pace of research in conventional rail technology gained momentum in fiscal year 1976. This was the first year in which almost all of the authorized railroad research and development funds were directed to solution of the rail industry's near-term problems. FRA's current research and development strategy is to focus attention on serving the needs of the potential users of technological improvements, such as Amtrak, Conrail, other rail carriers, and the railroad supply industry. As a result of this strategy, FRA has been able to identify areas of high priority research.

The July 1975 Railroad Research Study Conference, which was sponsored by FRA and the Association of American Railroads and attended by a large group of railroad experts, proved to be an invaluable tool in identifying and ranking railroad research needs. FRA's research and development programs are basically in consonance with the preliminary recommendations of the conference report. The ongoing research programs have been recognized as being vital for improvements in the rail industry.

One of the most significant accomplishments of the year was the completion of construction and the start of test operations on the facility for accelerated service testing at the Transportation Test Center in Pueblo, Colorado. This program was conceived, planned, and initiated as a result of joint efforts by FRA, the Association of American Railroads, the Railway Progress Institute, the Transport Development Agency of Canada, and many individual railroads and supply firms. The facility is the first of its kind in this country and

promises to provide highly valuable information on the performance of track and equipment components under heavy service conditions.

The testing is being conducted by operating a 9,500 ton train 5 days a week for 16 hours per day over the 4.8 mile closed loop. The tests will provide wear and performance data on track as well as rolling stock at a rate 10 to 15 times faster than is normally obtained from revenue service. The data collected will be used in making major decisions for improving the design, safety, and performance aspects of track, track components, and rolling stock.

The improvement of railroad safety is FRA's most important research and development goal. FRA's safety research program has as its objective the development of system specifications and supporting data for achieving near-term safety improvements through establishment of a solid technical base. In order to achieve this objective, FRA has been actively participating in the work of the newly established Railroad Safety Research Board, which has wide industry support.

FRA continues to pursue cooperative research programs with foreign countries. The most significant and rewarding program in fiscal year 1976 was with the Soviet Union, where rail technology is in an advanced state of development. Two U.S. delegations visited the Soviet Union during the year to observe rail operations and technology, and the Soviets provided FRA with numerous technical reports and research documents on their work. FRA's agreement with the German Federal Republic was reoriented towards conventional rail research. The Germans provided FRA with technical literature and research data on railroad electrification which is being screened for possible application in the U.S. The ongoing cooperative research programs with foreign countries offer great potential benefits to U.S. rail research activities by avoiding redundant research and by conserving research and development resources.

Significant FRA accomplishments during the year in railroad research and development included:

- Completion of Phase I of the truck design optimization project. Phase I generated two hundred and four magnetic tapes of truck test data. The data are available to the public through the National Technical Information Service of the U.S. Department of Commerce. The data include an economic methodology for determining truck costs, interim truck performance guidelines, several test reports, and a mathematical model for the prediction of truck and body responses. The Phase I data will provide the basis for performing actual truck modifications to obtain improved performance.
- Completion of the classification yard technology assessment project. The classification yard technology assessment project established a clear need for the development of a method for classification yard design. The development has now been completed, and the final report will be a useful tool in future yard planning.
- Completion of the trailer on flatcar optimization project. This project, which was conducted primarily in the rail dynamics laboratory on the vertical shaker system, ended with a short perturbed track test for correlation with the laboratory results. The project was designed to decrease the movement of freight within trailers through simple changes in the suspension systems of either the railcar or the trailers. The final report will include detailed laboratory techniques for the evaluation of rail car dynamics.
- Completion of the locomotive noise tests. With the cooperation of the Association of American Railroads and the Burlington Northern Railroad, an SD-40 locomotive was subjected to a variety of stationary and moving exterior noise level tests. The final report, published late in fiscal year 1976, contains locomotive diagnostic testing analyses in addition to wayside level measurements. The test results will provide useful design criteria for noise reduction on future locomotives.
- Publication of a report on improving fuel efficiency in rail freight service. Based upon the recommendations of FRA's rail freight fuel efficiency report, a Midwest railroad has been utilizing a locomotive control logic device which idles excess power units automatically when they are not required. This has resulted in lower fuel consumption rates.
- Beginning a passenger equipment evaluation program. In order to support Amtrak, an improved passenger equipment evaluation program was begun for both existing and new passenger train systems. Semiannual reports are expected to identify important areas of research, development, or design activity needed to develop improved passenger trains for use in different regions of the United States.
- Continuation of tracked air cushion vehicle testing. The prototype tracked air cushion vehicle was tested up to 145 mph (235 kph) on the 5.7 miles of inverted-tee guideway at the Transportation Test Center. No major technical problems were encountered with the system and the tests indicated that the vehicle had good ride quality at all speeds.
- Completion of a technical study to evaluate the flammability characteristics of passenger car interior materials. Amtrak has adopted FRA's guideline recommendations for flammability and smoke emission of combustible materials and, as a result, will no longer use polyurethane seat cushions in Amtrak trains.
- Initiation of a new research program devoted to electrification. In fiscal year 1977, the architectural engineering design will be completed for the electrifica-

tion of the passenger test loop at the transportation test center. The electrified track will then serve as FRA's test bed for installation, operation, and vehicle design experiments and will support FRA's research and development activities for the northeast corridor project.

- Awarding contracts for completing the exploratory development of the linear electric motor. Contracts were awarded for modifying the present double-sided motor on the linear induction motor research vehicle at the Transportation Test Center to a single-sided configuration so it can operate over existing tracks.
- Acquisition of FRA's first hi-rail track inspection vehicle, which will be used to support the facility for accelerated service testing at the Transportation Test Center and by FRA safety inspectors in the Colorado area. Capabilities of the vehicle include gage and cross-level measurement and detection of rail flaws at a maximum speed of 15 miles per hour. This capability supplements track geometry measurement cars by providing a vehicle for low speed visual inspection. Areas which are not readily accessible by larger inspection vehicles can now be inspected and data provided for necessary track maintenance.
- Continuation of the track – train dynamics program. Phase I of the program resulted in the development of 11 mathematical models which simulated and assessed the effects on train performance of such variables as individual rail car harmonic motion and long train dynamic phenomena. These results are being used by railroads as the basis for developing better operational procedures and train handling strategies. Phase II of the program, which is now underway, will include work in track structures, wheel – rail loads and temperatures, wear properties, fatigue properties, harmonic roll and bounce analysis, coupler systems analysis, and advanced analytical techniques.
- Continuation of efforts to reduce the frequency and severity of accidents involving hazardous material tank cars. FRA's efforts to improve the safety of hazardous material tank cars concentrated on the development of effective thermal shields for the cars. Eleven thermal shield candidates were evaluated at FRA's fire test facility. Full scale tank cars, outfitted with the most promising candidates, were subjected to fire tests. At the end of the year, accelerated service tests of tank cars, outfitted with both thermal shields and head shields, were being conducted. Other activities in the tank car area included simulated switchyard impact tests and relief valve flow tests. These test activities indicate that currently available technology can be utilized to retrofit hazardous materials tank cars to correct design and performance deficiencies. This information is currently being translated into a set of performance specifications which will form the basis for a national tank car retrofit program.
- Continued testing of prototype devices to detect overheated journal bearings and local derailments. During fiscal year 1976, prototype devices to detect overheated journal bearings and local derailments were installed on four freight cars and in-service tests were conducted. The devices proved capable of detecting both conditions. Accordingly, the program is being expanded and 124 rail cars will be equipped with improved detectors and tests will be conducted in revenue service to determine the durability and reliability of the detectors.
- Continuation of research on human factors. A new functional design for a locomotive cab was incorporated into a full-scale mockup and evaluated by experienced locomotive engineers. The evaluation will continue with the final output being a set of performance recommendations and design guidelines. A mathematical model was developed to describe the performance of locomotive engineers on selected tasks. The model will be expanded and used in the research locomotive and train handling evaluator.
- Assessment of programs to combat alcoholism and drug abuse in the railroad industry. A study which was performed during the year indicates that programs to combat alcoholism and drug abuse should be encouraged. However, measures of program effectiveness and guidelines for the development of optimal programs are lacking. These two areas will be addressed in a future study.
- Continuation of grade crossing studies. The fiscal year 1976 grade crossing safety program included studies of low cost innovative concepts for automatic gate systems and for detection and control systems. Efforts to improve locomotive visibility continue, and FRA has been working closely with several railroads to encourage visibility testing and to determine preferred beacon characteristics.

Equipment Testing

A number of important projects involving equipment testing or the improvement of test facilities were continued or completed during the year. A brief discussion of several of these projects follows.

- The Transportation Test Center's railroad test track, sometimes referred to as the high speed track, was completed with the construction of 8.3 miles (13.4 km) of mainline quality track for the southern segment. The entire 13.5 mile (21.8 km) loop was promptly put to use for the lightweight flatcar test project which was nearing completion when the year ended.
- Construction was completed on two miles (3.2 km) of 600-volt DC overhead catenary at the transit test track.

The catenary was used for testing three standard light rail vehicles (both San Francisco and Boston versions) for the Urban Mass Transportation Administration. By the end of the year, 13.8 KV commercial electric power and an onsite DC rectifier substation had replaced the locomotive generated 600-volt power supply and had freed the test center's 3,000 horsepower diesel-electric locomotive for other duties.

- The test center's vertical shaker system (consisting of four computer-controlled vertical actuators, each capable of delivering up to 40,000 pounds of force and vibration rates up to 30 Hz) was accepted in November 1975. From January to April 1976, the system was used for trailer on flatcar testing. It was then dismantled, in preparation for adding more equipment to increase the system's capabilities.
- Among the industry backed tests completed at the test center during the year were the American Steel Foundries (October to December 1975), Dresser Industries (January and February 1976), and American Car and Foundry (June 1976) proprietary tests of truck designs. The first Amtrak Turboliner high speed passenger train built by Rohr Industries also was tested (June and July 1976), attaining speeds as high as 127 mph (204.4 kph).
- Advanced systems testing, although being phased down, passed some milestones. Before the tracked levitated research vehicle program was officially terminated, the vehicle was propelled for the first time by its linear induction motor propulsion system. The prototype tracked air cushion vehicle was also shut down (although left in running condition) after achieving speeds as high as 144 mph (232 kph). Work continued, however, on the linear induction motor research vehicle, holder of the world's wheel-on-rail speed record at 255.5 mph (411 kph). As the year ended, the vehicle was being readied for a new series of propulsion system tests.
- Finally, as the year ended, a number of major test projects for conventional rail equipment were in progress. The accelerated life testing program for hazardous material tank cars had accumulated 13,903 miles (26,375 km) and had included slosh tests and 248 coupling impact tests. Switchyard impact testing involving hazardous material tank cars, which began in October 1975, was continuing at the three-quarter mile (1.2 km) impact facility track. The tank car torching test facility was being used to test the insulation capabilities of coated tank cars as well as steel plate samples, while a site was being prepared for tank car pool fire tests, which were to be conducted for the Association of American Railroads and the Railway Progress Institute by the U.S. Army's Ballistics Research Laboratory. The aerodynamic trailer on flatcar test program, which had attained speeds as high as 80 mph (128.7 kph), was preparing for further testing. Plans were also being made for future testing involving the transit test track, including a six-month test program for three new Washington Metropolitan Area Transit Authority transit cars.

Civil Rights

Continuing equal employment opportunity awareness training brought significant increases during fiscal year 1976 in the employment and advancement of minorities and women. Regional directors and safety inspectors have become more actively involved, particularly in the area of locating and assisting minorities and women who are qualified for positions in FRA.

Special program coordinators are providing special attention to women's affairs as well as to the needs of the Spanish speaking and of native Americans.

During the year, FRA met its goal of a 2.5 percent increase in employment of minorities and women. At the end of the fiscal year, female employees totaled 221 (27.9%), and minority employees totaled 118 (14.9%). At the end of fiscal year 1975, female employees had totaled 170 (25.7%), and minority employees had totaled 96 (14.5%). Total employment was 662 in fiscal year 1975 and 791 in 1976.

FRA also exceeded its goal in awarding contracts to minority business firms, with awards of $1,725,764 out of a total of $60,578,000. This figure is expected to double in fiscal year 1977, with the newly established Minority Business Resource Center in full operation. In fiscal year 1975, minority contracts amounted to $250,919 out of a total of $31,783,000.

Minority Business Resource Center

The Secretary of Transportation, in opening the Department's National Conference on Minority Business Enterprise on July 28, 1976, stated, ". . . I have no intention of spending $6 billion without making sure that minorities get a piece of the action." The Secretary was reiterating the intent of Congress as made clear in Sections 905 and 906 of the Railroad Revitalization and Regulatory Reform Act. Section 905 prohibits discrimination (based on race, color, national origin, or sex) in participating in the economic benefits to be generated by the authorized $6.4 billion financial assistance package. Section 906 requires the Secretary to establish a mechanism within the Department that will provide minority businesses with the financial, management, and marketing assistance they need in order to perform competitively in the market place of the railroad industry. Significantly, this mandate represents the first en-

actment of federal legislation in support of minority business enterprise. (The Small Business Administration's minority enterprise program was established by an agency directive, while the Office of Management and Budget's program was established by executive order.)

Immediately upon enactment of the Railroad Revitalization and Regulatory Reform Act, the Secretary assigned to FRA the responsibility of organizing the Minority Business Resource Center. The first Minority Business Resource Center activities involved preparing an initial budget proposal, alerting the executives of the principal railroads to the implications of the new legislation, and responding to initial inquiries from interested minority business enterprises.

While the Minority Business Resource Center was developing its plans for identifying business opportunities, establishing and operating a national clearinghouse for furnishing information on such opportunities to minority businesses, and providing management, technical, and financial assistance to them, interim procedures were established for the dissemination of information on all current procurements offered by Amtrak, Conrail, and the northeast corridor project. These interim procedures were developed in an effort to avoid the loss of initial business opportunities as the principal railroads began their programs under the Railroad Revitalization and Regulatory Reform Act.

As one of its more important early initiatives, the Minority Business Resource Center worked to establish a comprehensive plan for assuring a substantial minority business enterprise role in the early activities of the $1.75 billion northeast corridor improvement project. Through set asides, sheltered competition, and other means, an affirmative action program was devised to involve minority business enterprises in a variety of substantive and technically challenging assignments. Further, the plan carried with it a specific minority business enterprise participation of at least 15 percent of all northeast corridor work in program management, engineering, design, and construction which was to be performed by contract.

Conrail was similarly stimulated to initiate a program to identify and solicit bids from minority business vendors. Approximately $3.3 million in Conrail contracts out of a total of $120.5 million were awarded to minority businesses during the period between April 1 and September 30, 1976.

To reduce delays during the start-up process and to assure the constant availability of additional expertise from the private sector, the Minority Business Resource Center entered into two major contracts for both short-term general support and for the installation of a long-term business development and management assistance system. Work under these contracts had begun by the end of the year and was expected to last throughout the first year of the center's operation.

Administration

The FRA field organization was restructured during fiscal year 1976. One aspect of this restructuring was the consolidation of eight regional offices into a more streamlined five region structure while maintaining eight district safety offices.

The responsibilities of the regional offices were also increased as a result of this restructuring, and the position of regional administrator was created to carry out these increased responsibilities. The regional staffs were also expanded and included three main elements:

- An administrative staff, which is responsible for budget, accounting, personnel, administrative services, and management services;
- A director of federal assistance, who is responsible for implementing and administering the federal assistance programs; and
- A director of railroad safety, who is responsible for the safety program, including the achievement of safe operating and mechanical practices in the railroad industry and the enforcement of federal safety laws and regulations.

The Alaska Railroad

The Alaska Railroad marked its 53rd year of operation with record freight tonnages (2,131,585 revenue tons), revenues ($53,677,916), and employee productivity ($52,476 per employee), and a $20.6 million maintenance and equipment replacement program. The increased tonnage and revenue were due primarily to the construction of the oil pipeline.

The Alaska Railroad operates 534 miles of single main line track from the ports of Seward and Whittier through Anchorage to Fairbanks and Eielson Air Force Base. Interline freight tonnage from the lower 48 states and Canada comes to the port of Whittier in rail cars, in trainships, and on rail barges. Until fiscal year 1975, traffic through the port of Seward had been very light (following the earthquake of 1964). In the past two fiscal years, however, there have been 5,317 carloadings (in 1975) and 8,098 carloadings (in 1976) through Seward, as compared to 150 in 1974. For the second consecutive year, the railroad set a new record for total carloads of interline and local freight. The record set in fiscal year 1975 was 41,928 carloads. The new record is 49,584.

Passenger service is operated from Whittier to Portage and Anchorage and from Anchorage to Fair-

banks (a total of 419 road miles). The Whittier – Portage – Anchorage run is operated daily during the summer and three times a week in winter months. Consisting of passenger coaches and flatcars for auto, truck, bus, and motor home haulage, it principally serves the auto ferry, *M/V Bartlett*, which runs between Whittier and Valdez. The main passenger service is between Anchorage and Fairbanks; it operates daily from May to September and twice weekly during the winter. The most important intermediate stop is McKinley Station, location of the McKinley Park Hotel and gateway to McKinley National Park. Approximately 75 percent of the tourist passengers make a stop at McKinley Park.

The Alaska Railroad is under mandate from Congress to operate within its revenues. Prior to fiscal year 1975, it experienced a number of successive years when operating results produced negative cash flows. A $9.0 million appropriation was granted by Congress in fiscal year 1976. It was used to purchase five additional locomotives, rolling stock, construction equipment, and freight-hauling equipment, and to sustain a higher level of roadbed and track maintenance and improvement. An additional $6.0 million was appropriated for fiscal year 1977.

Fiscal year 1976 was an improvement over fiscal year 1975, with $53.7 million in revenues and an operating surplus of $4.1 million. The operating surplus was used to replace capital equipment and to undertake roadbed, track, and structure replacements and improvements. Reinvestment of part of the fiscal year 1976 surplus during the transition quarter in roadbed maintenance, coupled with significantly declining revenues, was expected to reduce the operating surplus for the full 15 month period to about $3.5 million.

During fiscal year 1976, the railroad moved 2,131,585 tons of freight (an increase of 11 percent) a total of 529,917,000 ton miles (an increase of 12 percent). Calendar year 1976 was the peak year in oil pipeline construction. Both calendar year and fiscal year 1977 will see a distinct downturn, already evident in trends developing during the transition quarter. Personnel and other adjustments are being made by the railroad in anticipation of lower revenues.

Significant tonnage comparisons between fiscal year 1975 and fiscal year 1976 by major classifications of revenue freight are shown in the Appendix.

National Highway Traffic Safety Administration

The National Highway Traffic Safety Administration (NHTSA) is responsible for reducing the number of accidents, deaths, and injuries on the nation's highways and for improving motor vehicle fuel economy. It concentrates its efforts on improving the characteristics of motor vehicles, the movement of traffic, and the skill and awareness of drivers.

Motor Vehicle Safety

In carrying out its responsibilities for the improvement of motor vehicle safety, NHTSA:

- Issues motor vehicle safety standards based on required levels of performance under specific test conditions. The standards apply to all vehicles, domestic and foreign, manufactured for sale in the United States and cover those parts of the vehicle which affect safe operation or which protect drivers and riders in the event of a crash.
- Investigates possible equipment defects related to motor vehicle safety. Information on defects comes in through consumer complaints, manufacturers' bulletins, police reports, and defective parts sent in through automobile clubs and private garages.
- Enforces compliance with safety standards through testing, manufacturer recall campaigns, surveys of imported cars, imposition of civil penalties (fines), and, if necessary, court action.
- Researches ways of improving the safety of cars, drivers, and riders through modifications to production vehicles so that the passenger compartment will be a "safe haven" in the event of a crash; through specially constructed research vehicles designed with safety, fuel economy, low pollution, and production costs in mind; through scientific accident investigation to determine the causes of accidents and resulting deaths and injuries, so that remedies can be designed; and through safer brakes and tires, better vehicle handling qualities, and improved vision for the driver.

Highway Safety

In carrying out its responsibilities for the improvement of highway safety, NHTSA:

- Issues uniform national standards for state and local highway safety programs. The 18 standards now in effect cover such subjects as driver education, traffic records, emergency services, highway design, alcohol, school buses, and motorcycle and pedestrian safety.
- Manages a grant program to encourage states and communities to accelerate their highway safety programs.
- Assists the states in training highway safety personnel in a variety of specialties.
- Researches new and better ways of making the highways safer for those who use them through studying the influence of alcohol and other drugs on driving ability; through increasing driver education and traffic safety awareness for all ages; through improving emergency medical services; and through improving court records, court procedures, and driver licensing and vehicle registration systems.

Fuel Economy

In carrying out its responsibilities for the improvement of motor vehicle fuel economy, NHTSA:

- Develops, issues, and enforces automotive energy standards;
- Conducts research on automobile fuel economy; and
- Develops an economic, marketing, and technological data base in support of the fuel economy program.

Accomplishments to Date

An evaluation of NHTSA's accomplishments to date requires the answers to several questions. Are cars safer than they were in 1966? Are roads and highways safer than in 1966? Are drivers more skillful and careful? Is traffic managed better and in a more uniform way? Are accident victims given better and quicker treatment?

Certainly cars are safer. Safety belts, safety windshields, collapsible steering columns, better door locks, and other basic safety features have been built into most cars on the road today. The General Accounting Office made a survey of 2 million cars involved in accidents in New York and North Carolina and concluded that the federal automobile safety standards had saved nearly 30,000 lives nationally over an eight-year period.

Drivers, of course, are still human beings. Though better informed and better trained, they sometimes

drink; they sometimes take chances; and they sometimes speed. They frequently fail to use safety belts. Though these human frailties still take their toll, the dangers have been greatly diminished by:

- The 55 mph national speed limit and more sophisticated law enforcement equipment;
- A national campaign to curb drinking drivers; and
- Improved driver training and licensing programs.

In addition, those who manage traffic and its consequences (the police, the medical technicians, the courtroom personnel, the statisticians) are better trained; and new methods and new equipment assist them.

Overall, the traffic death rate has gone down steadily since 1966; and it has gone down sharply since the 55 mph speed limit went into effect. Instead of 5.58 deaths per 100 million miles traveled in 1966 and 4.17 in 1973, there are now 3.42 — a total reduction of nearly 39 percent. There is little satisfaction, however, in the thought of 45,500 lives lost on the highways in 1975, even though more than 74,000 would have been killed if the 1966 traffic death rate had continued.

Continuing Problems

Several problems stand in the way of more rapid improvement in traffic safety. They include:

- Average speeds are increasing, following the sharp drop after imposition of the 55 mph speed limit.
- The proportion of small cars in the vehicle population is increasing (for fuel economy reasons), and the risk of occupant crash injury in small cars is greater than in large cars.
- Alcohol consumption is increasing. (From 1965 to 1974, per capita consumption of distilled spirits was up 36 percent, beer 22 percent, and wine 57 percent.)
- Annual vehicle miles are increasing, following the decrease in 1973 and 1974 due to the fuel shortage.
- There are continuing funding problems in all aspects of traffic safety.

The relationship between highway safety activities and traffic accident rates has not been firmly established. The problem is being addressed through a comprehensive reappraisal of the highway safety program and the standards on which it is based and through an evaluation of the effectiveness of specific highway safety programs, with emphasis on statistical validation of the results.

The problems of funding and of competition for funds will persist. However, with identification of effective programs, available state and federal funds can be channeled into the most productive activities.

Traffic Safety Priorities

It is not possible to assign a specific lifesaving contribution to any one of the complex of motor vehicle and highway safety projects and programs. An estimate of their actual and potential achievement is necessary, however, for planning purposes and for the allocation of resources. These are currently the leading priorities:

- Reappraisal of the purpose, rationale, substance, and management of the federal – state – community highway safety program and of its basic structure and future thrust. (The study will include the relationship between NHTSA and the states, and the sources and use of highway safety funds.)
- Issuance of fuel economy standards that are economically practical and that take emission, safety, and noise factors into account.
- Establishment of a national accident reporting and analysis system which will yield detailed and statistically valid information on traffic accidents, deaths, and injuries.
- Enforcement of the 55 mph speed limit by the states and analysis of its effect on both traffic safety and fuel economy.
- Continuation of the crash survivability programs, primarily through passive restraints and other motor vehicle safety standards.
- Continuation of the campaign against drunken driving, and inclusion of research on the effects of other drugs insofar as they adversely affect traffic safety.

The 55 mph Speed Limit

In 1974, a nationwide 55 mph speed limit was enacted by Congress as a conservation measure to combat the fuel shortage. An additional major benefit was derived in the saving of human lives. In calendar year 1973, prior to the fuel shortage, the death toll on the nation's highways had reached 54,052. In calendar year 1974, which bore the brunt of the fuel shortage and which was affected by the reduced speed limit for most of the year, highway fatalities were 45,196, down almost 9,000, and 16.4 percent below calendar year 1973. With the increased availability of fuel, highway travel increased 3.7 percent in calendar year 1975. Highway deaths, however, were 17.6 percent below the 1973 total.

During the same period, the average speed of vehicles on main rural highways dropped from 60.3 mph in 1973 to 55.3 mph in 1974, and then rose slightly to 55.8 mph in 1975. Equally important, the percentage of vehicles traveling at higher speeds declined sharply. The proportion of vehicles traveling at speeds greater than 60 mph was reduced from 50 percent in 1973 to 21 percent in 1974 and 1975; the proportion traveling

more than 65 mph was reduced from 31 percent in 1973 to 6 percent in 1974 and 1975; and the proportion traveling more than 70 mph was reduced from 14 percent in 1973 to 2 percent in 1974 and to 1 percent in 1975.

All in all, the evidence does indicate that the 55 mph speed limit is a major contributor to traffic safety.

Crash Survivability

Crash survivability is the collective term for those measures and devices which improve the chances of surviving a crash without serious injury. The most important step in crash survivability is to assure that riders are effectively restrained to avoid injury due to impact against the interior components or due to ejection from the vehicle.

In June 1976, the Secretary issued a notice of proposed rulemaking titled "Motor Vehicle Occupant Crash Protection." In that notice, the following five possible courses of action were listed for consideration:

- Continuation of existing requirements for safety belts in cars.
- Enactment of state mandatory safety belt usage laws.
- Field testing of passive restraints.
- Mandatory installation of passive restraints.
- Requiring automobile manufacturers to provide passive restraint options.

The Secretary also requested comments on the following major issues:

- The appropriate role of the federal government in prescribing motor vehicle safety standards;
- The benefits and costs of alternative occupant restraint systems; and
- Public acceptance of occupant restraint systems.

In August 1976, the Secretary chaired a public hearing to receive oral comments on these options and issues. In addition, over 7,000 written comments were received.

A number of major rulemaking actions were taken during the year to improve the crash survivability of school buses to be manufactured after April 1, 1977. The new or amended standards require improved seat structures and padding, increased roof strength, fuel systems that will not leak excessively in severe crash tests, improved emergency exit provisions, and generally upgraded structural integrity and fabrication. In addition, a study was initiated to determine what further steps can be taken to improve school bus safety.

Crash Avoidance

The crash avoidance capability of motor vehicles was enhanced by one new standard and by amendments to several existing standards. Standard No. 120, "Tire Selection and Rims for Vehicles Other Than Passenger Cars," was issued on January 19, 1976. Amendments were issued to upgrade standards No. 103, "Windshield Defrosting and Defogging Systems"; No. 105, "Hydraulic Brake Systems"; No. 106, "Brake Hoses"; No. 108, "Lamps, Reflective Devices and Associated Equipment"; No. 109, "New Pneumatic Tires — Passenger Cars"; No. 111, "Rearview Mirrors"; and No. 121, "Air Brake Systems."

Reducing Auto Theft

The Department of Transportation and the Justice Department are the lead agencies in the Interagency Committee on Auto Theft Prevention. The committee's goal is to reduce auto theft by 50 percent by 1980. Accordingly, two advance notices of proposed rulemaking were issued which should upgrade safety and at the same time deter theft. One was for standard No. 114, "Theft Protection"; and the other was for standard No. 115, "Vehicle Identification Number". NHTSA is also drafting a uniform national standard on vehicle titling and theft to prevent the switching of titles from junked to stolen vehicles.

Tire Grading

The uniform tire quality grading regulation was issued in May 1975, to become effective in January 1976. In August 1975, the Sixth Circuit Court of Appeals was petitioned by eight domestic tire manufacturers and the court granted their motion to stay the effective date pending judicial review. In September 1976, the court upheld, in the main, the provisions of the regulation; and final regulations were issued to grade passenger car tires for relative performance in treadwear, traction, and temperature resistance.

Compliance Testing

During the year, NHTSA tested 140 vehicles to check for compliance with 257 requirements of the safety standards. In addition, 1,600 tires and 3,914 items of motor vehicle equipment, including seat belts, lighting equipment, brakes, child restraints, and motorcycle helmets were subjected to performance tests. Over 277 compliance investigations were completed, and 20 civil penalties were imposed.

Although the uniform tire quality grading regulation was in litigation during most of the year, NHTSA continued its testing at San Angelo, Texas, to facilitate early implementation of the rule upon approval by the court.

Recall Campaigns

Between September 1966 and the end of fiscal year 1976, some 50 million vehicles were recalled in 2,033 recall campaigns. Foreign vehicles were involved in 386 of the campaigns.

Integrated Test Vehicles

The purpose of the integrated test vehicle program is to furnish data on the complex relationships among national goals involving vehicle safety, energy conservation, environmental protection, and economy.

Each segment of the program culminates in the design, development, fabrication, testing, and evaluation of experimental vehicles. During development of these test vehicles, a systems approach is used to meld all vehicle subsystems into a single design. Testing and evaluation of these vehicles verifies that all four goals can be satisfied in a car that is practical, producible, affordable, and acceptable to the consumer.

The current phase of the program is called the research safety vehicle program. It addresses cars in the 3000 pound (maximum) weight class and is responsive to requirements anticipated for the mid-1980's. Two integrated test vehicles, incorporating two different approaches, were fabricated for evaluation. The Calspan/Chrysler vehicle is based on modification and improvement of a newly introduced production vehicle. The Minicars vehicle is an all-new design which utilizes a foam-filled structure to reduce weight and to improve omnidirectional crashworthiness. Both vehicle designs provide increased crashworthiness, improved occupant protection, and excellent fuel economy. Additional important considerations are provisions for pedestrian protection, crash avoidance capabilities, engine emissions control, producibility, materials recycling, low operation and maintenance costs, and functional utility.

The integrated test vehicle program serves as the focal point for U.S. participation in the international experimental safety vehicle program, which is conducted under the auspices of the North Atlantic Treaty Organization's Committee on the Challenges of Modern Society. During the year, the U.S. tested and evaluated experimental vehicles developed by British Leyland and Renault. In addition, plans were completed for the Sixth International Technical Conference on Experimental Safety Vehicles, which was to be held in October 1976 in Washington, D.C., in conjunction with the U.S. bicentennial celebration.

Biomechanics

The biomechanics program uses a multifaceted research approach to understand the response and cause of injuries of occupants, pedestrians, and motorcyclists in automotive crashes. The program utilizes data which is generated through advanced experimental, statistical, and analytical techniques to identify the engineering parameters necessary to predict human injury. These parameters will be incorporated in an advanced anthropomorphic dummy or in other test devices and ultimately will permit development of more precise standards for reducing injuries.

Diagnostic Inspections

Motor vehicle diagnostic inspections are conducted by NHTSA to generate data for the demonstration program authorized by Title III of the Motor Vehicle Information and Cost Savings Act of 1972.

Federal funding of the inspections (conducted in Alabama, Arizona, the District of Columbia, Puerto Rico, and Tennessee) was to terminate June 30, 1976, but new legislation authorized continued federal funding for at least three of the projects through September 1977.

As of June 30, 1976, over 125,000 diagnostic inspections had been performed. Analysis of the data will furnish information on the costs and benefits of diagnostic inspections, using current equipment.

A special diagnostic inspection demonstration project was authorized in October 1974, by legislative amendment. This project will assist in the development of advanced diagnostic equipment suitable for use in high volume inspection facilities.

The goal is to assess compliance with safety, noise, and emission standards and to assist motor vehicle owners in achieving optimum fuel and maintenance economy. The demonstration project also will investigate the compatibility, cost, and state of development of the diagnostic equipment which is available to small automotive repair establishments.

Periodic Inspections

Thirty-two states now have periodic inspection programs. During the year, Idaho repealed its motor vehicle inspection law and Alaska failed to implement its program. Eleven states were conducting trial substitute inspection programs to determine if other inspection methods are more feasible.

Eight states were conducting experimental wheel removal projects to inspect visually the condition of the brake drums, rotors, pads, and linings. Data on the rate of wear of the components will form the basis for optimizing the frequency of inspection of the braking system.

Engineering Test Facility

The motor vehicle and school bus amendments of 1974 established the right of people to petition for the development of new safety standards and for enforcement actions relating to possible noncompliance with safety standards and possible safety defects. Petitioners are assured that within 120 days either their petitions will be granted and action initiated or the petitions will be denied and the reasons for denial will be published. The 120 day deadline requires some quick reaction testing. There is also a growing need for quick reaction testing to assure expeditious handling of investigations following approval of petitions.

As a result of the need for quick reaction testing, NHTSA has signed a lease agreement covering building space at the Transportation Research Center of Ohio, East Liberty, Ohio, for use as a test facility. The agreement provides for alterations to the building space to facilitate safety defect testing and a small volume of compliance testing. The first safety defect test began in September 1976 and the volume of testing is expected to grow rapidly.

A major reason for selection of the Ohio center was the availability of excellent test driving surfaces at the center. These include a 50 acre vehicle dynamics area with return loops, a 7.5 mile high speed oval track, and a 2,500 foot skid pad with approaches and return loops — all of which are important to safety defect testing.

Emergency Medical Services

NHTSA instigated an inventory of state emergency medical resources to facilitate the development of statewide comprehensive emergency medical service plans. Active emergency medical service programs are underway in all the states, the District of Columbia, and Puerto Rico. They feature centralized planning and coordination and, in many instances, centralized control of the emergency services.

More than 180,000 emergency medical technicians, including fire and police personnel, had received the Department's basic emergency medical technician course by July 1976. Five thousand Navy corpsmen were also being trained. A 400 hour paramedic course, developed by the Department, has been endorsed as the national standard by the Interagency Committee on Emergency Medical Services.

Many ambulances have been purchased, either to provide service where none existed previously or to replace ill-equipped vehicles. A large number of rural communities have been provided with quality emergency medical service for the first time.

In 1973, federal legislation permitted expansion of the program in which military helicopters and medical crews assist in transportation and emergency treatment of highway crash victims.

As of August 30, 1976, there were 23 active sites serving portions of 29 states. A total of 8,173 missions (18,234 flight hours) had been flown, and 8,552 seriously ill or injured patients had been assisted.

Planning is underway to bring four additional military units into the system as soon as possible.

Police Services

The first six months (January through June 1976) of the Stockton, California, police department's driving under the influence demonstration project resulted in a marked decrease in crashes during the time (Friday and Saturday 8:00 p.m. – 4:00 a.m.) that the task force was on duty.

An effort is underway to stimulate increased police use of preliminary breath testing devices for alcohol. Seven states and two federal agencies are participating. Training programs in detection of alcohol related traffic offenses have been prepared and have been distributed to patrol personnel as well as to supervisors.

Driver Licensing

Since driver error contributes to approximately 85 percent of motor vehicle crashes, improvement in driver education and licensing is essential to continued crash reduction.

During the year, a comprehensive review of state medical advisory boards was made and a series of six driver examination training films was completed. The advisory boards are used by state driver licensing administrators for advice and counsel on medical questions. A model law is available to assist the states in establishing such boards. In addition, there are training films to help driver examiners recognize physical and mental disabilities in drivers.

Fundamental to adequate driver licensing is complete information on the applicant's driving record. The national driver register operated by NHTSA is checked by nearly all driver licensing jurisdictions in the United States. It can provide a record of license suspensions or withdrawals in nearly all jurisdictions during the preceding five years.

Traffic Records

The general trend in the field of traffic records is toward user responsiveness rather than processing efficiency, due primarily to increased demand at the federal level

for statistically valid justification of safety program funding requests.

NHTSA is funding several projects for records system improvements which will assist safety program managers in pinpointing problems and assessing results. The projects include:

- Implementation by New Hampshire of a model totally integrated traffic records system;
- Upgrading of state accident data bases by installation of a computer software package with statistical analysis capabilities; and
- Issuance of a guide to the use of traffic records data in identifying traffic safety problems.

Traffic Law Adjudication

The Highway Safety Act of 1973 directed the Secretary "to conduct research into, and make grants . . . for projects to demonstrate the administrative adjudication of traffic infractions."

In a report to Congress in July 1976, the Department provided an executive summary of current efforts, analyzed administrative adjudication problems, and submitted recommendations for more effective state implementation of improvement programs. A supplement to the report detailed the results of NHTSA research and of the special adjudication demonstration projects and reviewed the status of administrative adjudication and noncriminal traffic infraction adjudication in the states.

The federally funded Seattle project, which ended in June 1976, is being continued through the use of state and local funds. Plans are underway to test the Seattle parajudicial approach in suburban and rural courts.

The Seattle project improved the speed and efficiency of case processing, including municipal court efficiency. The docket backlog decreased, while trials of nontraffic offenses and fine revenues increased. Informal magistrate hearings produced better driving behavior than court trials or forfeiture without an appearance. A similar Rhode Island project has shown similar initial results.

Traffic Safety Training

Training for highway traffic safety program planners and managers was emphasized throughout the year. Ten regional workshops in methods of program evaluation were conducted. State highway safety program managers attended five two-week NHTSA traffic safety program management courses. This was the beginning of what became NHTSA's fellowship – internship master's degree in traffic safety program management at the University of Southern California.

Revised curriculum materials were published for the emergency medical technician, traffic records, and traffic court judge occupational fields. New training materials were published for the vehicle inspection and emergency vehicle dispatching occupations.

Alcohol and Drug Abuse

Fatal traffic crashes can seldom be attributed to a single cause, but rather to the interplay of such factors as human error, mechanical failure or malfunction, and weather. Of the many influences contributing to fatal crashes, alcohol stands out as the most frequent killer, either alone or in partnership with other factors. Alcohol is present in fully half of all fatal accidents and is a contributor to half of all traffic deaths — nearly 25,000 people a year. Social drinking is responsible for perhaps one-third of the deaths, while the problem drinker is responsible for the other two-thirds; and problem drinkers are a very small fraction of the total population.

As part of its effort to curb the role of the drinking driver to a measurable degree, NHTSA has given its alcohol safety action projects and the overall alcohol countermeasures program a high priority. The alcohol safety action programs were introduced successfully into 35 communities, where they became focal points for the campaign against the drinking driver. Advanced time series analytic techniques are now being used to document the impact of these programs. The New Hampshire alcohol safety action program, for instance, demonstrated a major reduction in nighttime fatal crashes, while daytime crashes remained constant. Many states now are carrying out locally conceived and funded programs, modeled after the alcohol safety action programs.

In 1975–76, based on the alcohol safety action program experience, NHTSA initiated a series of individual countermeasure demonstrations, such as an increased driving under the influence enforcement program and a probation follow-up program.

Pursuant to the 1973 Highway Safety Act, research began on the relationship between highway safety and drugs other than alcohol. Preliminary data remain inconclusive, but refined analytic methods are being applied to current epidemiological studies. The National Institute on Drug Abuse is working closely with the Department.

Driver Education

As required by the 1973 Highway Safety Act, NHTSA has submitted to Congress two reports on the driver education evaluation program. These reports review

the status of traffic safety education as a highway safety measure and NHTSA's efforts to document its crash reduction potential.

The driver education evaluation program focuses on a 5-year evaluation of a model high school driver education program called the safe performance curriculum. This overall program will include a large number of students who will be divided into education and no education groups. Driving records for each group will be monitored for a minimum of two years.

An accident avoidance training curriculum is under development. Phase I involved identification of behavioral requirements for responding to representative accident situations. In Phase II, the necessary specifications for a training program were defined. Phase III will include the development and evaluation of a procedure for simulating accident situations.

Studies have pointed out the over-involvement of youthful drivers in traffic accidents and the correlation with the use of alcohol. As a result, NHTSA initiated a project to prepare an alcohol traffic safety program for use at the secondary school level, with both student and teacher manuals. The effectiveness of this project in reducing alcohol related crashes will be tested in a demonstration program.

Another educational project is designed for young drivers (ages 15–24) who are identified as problem or near-problem drivers. The project will include evaluations of the crash reduction effectiveness of such a driver improvement program.

Motorcyclists

The Highway Safety Act of 1976 forbade the Secretary to withhold funds from any state failing to require safety helmet use by motorcyclists 18 years of age or older. At the time, 48 states, the District of Columbia, and Puerto Rico had helmet use laws. Since May 1976, when the President signed the bill, eight states have either weakened or repealed their helmet laws. Studies are underway in three of these states (Kansas, South Dakota, and Oklahoma), to determine the effect on helmet use and the incidence and severity of head injuries in motorcycle crashes since the laws were revised.

In both Sacramento and San Diego, California, a NHTSA supported motorcycle driver testing and licensing project became operational. During this project, up to 36,000 motorcycle license applicants will be randomly assigned to take either the standard California tests or the new skill and knowledge tests. Cyclists completing the improved tests are expected to have a 5 to 15 percent lower accident rate. Accident and violation records of the two groups will be followed for up to two years.

Pedestrians and Bicyclists

A study which was submitted to Congress in February 1975 indicated that pedestrian and bicycle safety can best be addressed at the state and local level. NHTSA has, therefore, concentrated on providing assistance to communities in identifying their pedestrian – cyclist problems and in implementing programs to reduce them.

Research is being conducted on ways to counter the seven types of pedestrian accidents which account for 57 percent of all urban pedestrian accidents. Several techniques, including in-school training programs and public service messages, are being tested. The pedestrian safety program standard is under review to determine its adequacy and appropriateness in relation to current safety needs.

A highway safety standard for pedalcyclists has been the subject of NHTSA activity in bicyclist safety. Comments have been received from the public in response to two notices of proposed rulemaking. The proposed standard is concerned with the definition of a bicycle as a vehicle, uniform rules-of-the-road, and accident investigation and reporting, as well as education and enforcement.

The Use of Safety Belts

To double or triple the use of safety belts would save more lives than any other traffic safety measure, device, or program. At the end of 1975, there were 107 million registered passenger cars in this country — 93 percent of them equipped with safety belts. Since it is estimated that the current usage rate is around 20–25 percent, there are many millions of vehicle occupants who do not wear safety belts.

A manual being developed by NHTSA for state officials and legislators will contain suggestions for integrating safety belt use into state programs on driver education, driver licensing, and periodic motor vehicle inspection.

NHTSA also has issued a paper on safety belt effectiveness, with suggestions for the states to increase usage. The study estimates that the lap/shoulder belt is 60 percent effective in preventing death and 57 percent effective in preventing serious injury. Other educational materials, including an audio-visual presentation, will be distributed nationally to schools, safety organizations, safety directors, service clubs, and insurance companies.

Traffic Safety Statistics

The ability to understand the complexity of traffic safety problems and their relationships, the ability to devise responses to the problems, and the ability to establish priorities are all dependent on an adequate foundation of data. The acquisition of this data and its analysis are a formidable task in a country where roughly 140 million motor vehicles are driven nearly 1 1/2 trillion miles by almost 130 million drivers and where traffic accidents are estimated to number around 17 million annually. In the 10 years of its existence, NHTSA has established, or is in the course of putting into operation, a series of data systems which are gradually creating the needed factual base.

The conceptual design of a *national accident sampling system* was completed in fiscal year 1976. The concept was presented to an independent panel of experts, who agreed that it was feasible and recommended its implementation. A four-year implementation plan was prepared and will be pilot tested. When fully operational, the national accident sampling system will receive data from a nationally representative sample of accidents collected by accident investigation teams located at randomly selected sites within the forty-eight contiguous states. This will provide a data base for statistical analyses of highway traffic safety problems and trends and will permit the assessment of standards and programs.

The *fatal accident reporting system* became fully operational during the year. The first periodic reports were issued and an online file became available for use by the highway safety community. This system has enabled NHTSA to better assess the presence of various types of occurrences in fatal accidents, to analyze trends and compare incidents in differing localities, and to determine problems related to fatal accidents. The usefulness of the system is expected to increase with the second year of data collection, especially with respect to the analysis of trends.

The *national accident reporting system* will extend fatal accident data collection to include a sample of nonfatal accidents. This extension will provide NHTSA with its first statistical data base for the entire spectrum of highway accidents. A feasibility study for this system was conducted during fiscal year 1976, and a test is planned for fiscal year 1977.

Data collection has been completed for the pedestrian – bicyclist accident data sampling and analysis program. This program provided data for a probability sample of pedestrian and bicyclist accidents through supplemental police accident reports. It also tested the feasibility of enlisting and training randomly sampled police agencies to fill out supplemental forms and identifed some of the problems that might be encountered.

International Traffic Safety

NHTSA participates in the exchange of vehicle and traffic safety experience and research data among the industrialized nations of the world and in the development of internationally compatible vehicle and highway safety standards.

The principal organizations with which NHTSA has been working are — the North Atlantic Treaty Organization, the European Conference of Ministers of Transport, the Committee Internationale de l'Inspection Technique Automobile, the Organization for Economic Cooperation and Development, and the United Nations Economic Commission for Europe.

At an April 1976 meeting in Brussels, NHTSA completed a six year effort for the North Atlantic Treaty Organization with the presentation of a report on a follow-up of an earlier pilot study on road safety. This study, which was led by the U.S. but which had active support from North Atlantic Treaty Organization nations, has been singularly successful. Most of the study's recommendations have been implemented, and work is continuing on the research safety vehicle portion of the program.

In cooperation with the Departments of State and Commerce, NHTSA provides delegates and support to the Economic Commission for Europe's Group of Experts on Construction of Vehicles and to its Group of Experts on Road Traffic Safety. NHTSA has also participated in cooperative international research and studies involving alcohol and driving; accident investigation; motorcycle, pedestrian, and bicycle safety; driver education and licensing; anthropomorphic test dummies; and emergency medical services.

Consumer Protection

Interest in NHTSA's programs and services to the consumer has been stimulated by concern over energy conservation and over the consequences to the nation's traffic fatality and injury picture of the law establishing a national 55 mph speed limit. There has been particular interest in NHTSA's monthly fatality reports, which reflect statistics considerably below the figures for the base statistical year of 1973.

The NHTSA program to reduce drinking and driving among teenagers was also of intense interest to numerous groups, such as educators, parent and teacher associations, church organizations, and the press.

The auto safety hotline, begun in October 1975 as an experimental 10-state, toll free, consumer trouble line, became a national facility in July 1976 and han-

dled a daily average of about 200 consumer calls. The function of the hotline is two-fold:

- It serves as a fast and prolific data source, with the data being used as the basis for investigation and identification of safety-related motor vehicle defects; and
- It helps the consumer to solve automotive problems, either through NHTSA expertise or through guidance in reaching the appropriate source of assistance.

As the departmental consumer representation plan is put into operation, it will be found that a number of initiatives have already taken place in NHTSA. They include increased use of NHTSA consumer mailing lists to tap consumer opinion on topical issues and an effort to make every safety related NHTSA activity a matter of public record and of direct benefit to the consumer.

New fact sheets and brochures have been added to the educational materials on traffic safety regularly supplied to the consumer. These publications cover such topics as tips on car care and safety for deaf drivers, how to deal with motor vehicle emergencies, common sense in buying a safe used car, and passenger car brakes.

Traffic Safety Litigation

Several important court actions involving traffic safety were completed during the year.

- On April 19, 1976, the Supreme Court upheld an opinion that the civil penalty provisions of the National Traffic and Motor Vehicle Safety Act do not offend the due process clause of the Constitution.
- Several tire manufacturers sought Sixth Circuit Court of Appeals review of the uniform tire quality grading standard, alleging that it was invalid. On September 2, 1976, the Court disagreed, upholding the principal provisions of the standard.
- On July 23, 1976, the District Court for the District of Columbia upheld the validity of a NHTSA order that General Motors notify owners of a defect in the fuel inlet plugs installed in some 374,000 1965–66 Chevrolets and Buicks. The court further ordered General Motors to pay $400,000 in civil penalties for its failure to comply with the administrative directive.
- On January 13, 1975, NHTSA filed an enforcement action against General Motors in the District Court for the District of Columbia, seeking to compel General Motors to notify approximately 441,000 owners of certain 1965–68 Buicks and 1970 Cadillacs of possible throttle jamming resulting from engine mount failure in those vehicles. General Motors settled the matter on July 1, 1976, agreeing to notify owners of these vehicles, to remedy the defect, and to pay a sum of $95,000 to the government.
- In August 1975, NHTSA filed an enforcement action in the District Court for the District of Columbia, seeking to compel Ford to notify owners of and to remedy defective front seats in 1968 and 1969 Mustangs and Cougars. The court granted the government's motion for summary judgment on October 1, 1976, and is expected to order the company to provide the notification and remedy sought by the government.

Civil Rights

There were several notable accomplishments by NHTSA in the field of civil rights during the year:

- The EEO counseling program was strengthened by the appointment of 17 new counselors and the extension of their services to the regions, by a training program for top level NHTSA managers, and by adoption of equal employment opportunity goals;
- Minority employment increased from 182 (21.2%) at the end of fiscal year 1975 to 201 (22.6%) at the end of fiscal year 1976. The number of female employees increased from 285 (33.3%) to 308 (34.6%). Total employment was 857 in fiscal year 1975 and 889 in 1976.
- The total value of the contracts awarded to minority businesses increased to $637,670, compared to $608,900 in fiscal year 1975; however, the total number of contracts awarded remained at 14. Total contracts awarded amounted to $48.2 million in fiscal year 1975 and $30.3 million in 1976.

Administration

An Office of Automotive Fuel Economy was established during the year to carry out the functions of Title V of the Motor Vehicle Information and Cost Savings Act of 1972. The new office will formulate proposed average fuel economy standards for passenger automobiles and will assess penalties or allow credits to manufacturers who fail to meet or who exceed these standards.

A National Center of Statistics and Analysis was approved in September 1976. It will expand and improve NHTSA's data gathering and data analysis capabilities. The goal is to develop a national data system which will provide a basis for the optimal allocation of highway safety resources.

To assure better use of highway safety funds, a new plan for the delivery of highway safety grants to the states was developed. Called the highway safety management system plan, it applies a problem identification approach to the reduction of accidents and fatalities. This approach will enable the states to focus on those problems which show promise of major reductions in accidents, injuries, and fatalities.

Urban Mass Transportation Administration

The Urban Mass Transportation Administration (UMTA) implemented new policies and procedures and made new capital investments during the year that will build an expanded transit ridership throughout the nation in the years ahead.

UMTA has invited ideas and opinions from outside the agency and has begun to incorporate these views into its planning and decision making processes. Examples include the annual research and development priorities conferences, the public hearings held in Washington on new transit bus design and on railcar standardization, meetings on the transportation alternatives analysis process, and open meetings in major cities on rapid transit proposals.

Better and clearer procedures were developed for making capital grant decisions. Under those new procedures, several major grant decisions were made, the backlog was reduced, and UMTA moved forward with new rail starts (where justified).

Strong cost control policies were implemented within the capital grant program. They called for full funding contracts, thorough alternatives analysis, and improved transportation system management.

Major efforts have been made to relate transit investments to the preservation of cities through the development of transit malls, through auto restricted zone experiments, through downtown people mover projects, and through promotion of joint development and other financial approaches.

The UMTA research and development program has been streamlined, given a new emphasis on deployment of proven products and systems, and changed from a program which, in fiscal year 1974, devoted only 24 percent of its funds to projects with near term operational payoffs to one which projects a 67 percent effort in that direction in the fiscal year 1978 budget.

Finally, because urban mass transportation contributes positively to two of the nation's highest priorities — energy conservation and improved air quality — these two concerns continue to play a key role in public transportation decisions.

Mass Transportation Policy

During fiscal year 1976, UMTA initiated or continued a number of major policy development activities that will significantly affect the UMTA program and its impact on local communities.

- The final policy statement on major urban mass transportation investments was issued in September 1976, completing a consultation process that included two major conferences with representatives of transit operators, planning organizations, federal, state, and local governments, consultants, and other interested parties. The policy statement defines the planning analysis that will be required to justify UMTA grants for major fixed guideway transit investments and the procedures UMTA will follow in considering and funding such requests.
- A key policy which was being developed during the year involved the matter of accessible transit buses. Regulations issued on April 30, 1976, required a package of physical features, such as stanchions and stepwell lighting, which would help elderly and handicapped persons use transit buses. They also required an eight inch maximum riser and an optional wheelchair accessibility package, but no compliance date was set. Public hearings were held in May 1976 to determine an effective date for these last two requirements, as well as setting a maximum floor height requirement. A decision was made, in July 1976, to require a 24 inch effective floor height for all transit buses.*
- Consultations were initiated to refine and elaborate on UMTA's requirements for maximum feasible participation by private enterprise in local transportation programs and to spell out the potential role of paratransit services in local transportation programs. A draft policy statement was published for comment in October 1976.
- In September 1975, joint regulations were issued by UMTA and the Federal Highway Administration, integrating their respective planning and programing requirements and updating them to take account of the landmark 1973 Highway Act and of the National Mass Transportation Assistance Act of 1974. These regulations require urbanized areas to develop transportation system management plans and programs which will make more efficient use of transportation facilities.

*This decision has since been superseded by a decision to require a 22 inch floor height.

During fiscal year 1976, special efforts were initiated to monitor local implementation of the plans and to provide technical assistance. A number of university research grants made in 1976 included activities in support of the transportation system management requirements.

- In February 1976, the Administrator established a program review task force to review and evaluate UMTA grant delivery policies and procedures, to identify issues in grant management and make recommendations to resolve them, and to produce a revised external operations manual and internal procedures handbook reflecting an integrated grant management process. Generally, the aim was to evaluate the way UMTA handled its major grant programs, to make recommendations for change, and to assure that appropriate changes in its program management were adopted. Several meetings were held with transit authorities, the Conference of Mayors, and the Governors' Conference to gather suggestions.

A review of the UMTA grant systems suggested several steps toward more effective management, short of legislative change. Those steps were based on five areas of need — to move the UMTA grant approval process from a project by project basis to a broader program basis; to intervene in local programing decisions only when required because of specific federal mandates or resource allocation issues; to focus key decisions regarding an urban system all at one point or period of time; to limit required paperwork and documentation; and to provide clear funding targets for local decisions when that is possible.

As a result of the review, UMTA proposed a new grant management system which moves much of the federal decision making to the annual UMTA program review for each urbanized area, reducing the current project by project process for capital and operating grants. This proposal will form the basis of an UMTA operating manual which will be used by all grantees.

Legislation

After the National Mass Transportation Assistance Act of 1974 was signed into law, UMTA concentrated on its implementation; and major new legislative initiatives were held in abeyance pending UMTA's experience with that Act. In fiscal year 1976, however, legislative initiatives were taken and two new Acts that affected UMTA's programs were signed into law. On February 5, 1976, the Rail Revitalization and Regulatory Reform Act of 1976 amended the Urban Mass Transportation Act of 1964 to provide $125 million in federal financial assistance (through fiscal year 1978) to state and local transportation authorities to help cover costs incurred for the continued operation of certain commuter rail passenger services after September 27, 1976. Then, on May 5, 1976, the Federal-Aid Highway Act of 1976 changed the method of valuation of segments of interstate highway to be withdrawn in substitution for a public mass transportation project to allow a greater period of cost inflation to be taken into account.

Regulatory Activities

During fiscal year 1976, UMTA prepared and implemented a number of regulations, guidelines, and procedures.

- On September 17, 1975, UMTA and the Federal Highway Administration published final regulations on planning standards and the transportation improvement program. These regulations require that each urbanized area, as a condition of the receipt of federal capital or operating assistance under the UMTA program, have a transportation planning process that results in plans and programs consistent with the comprehensively planned development of the urbanized area. These regulations also require the development of a transportation system management plan. Subsequently, on March 10, 1976, UMTA published interim regulations on the coordination of federal and federally assisted programs and projects with state and local governments.
- On April 1, 1976, UMTA published final regulations governing the provision of charter and school bus service by UMTA grantees. These regulations are designed to ensure that federal assistance is not used to support charter and school bus operations that will prevent private charter and school bus operators from providing such services.
- On April 30, 1976, UMTA published final regulations that both formalized and significantly strengthened UMTA's requirements on transportation for elderly and handicapped persons. The regulations require full accessibility for new rapid rail systems and the availability of wheelchair accessibility (either ramp or lift) option packages for new buses. The regulations also mandate the involvement of elderly and handicapped persons in planning local transportation for elderly and handicapped persons.
- On August 16, 1976, UMTA published guidelines and procedures for the rail passenger service continuation assistance program.
- On September 22, 1976, UMTA published its policy with respect to major urban mass transportation investments. In particular, an analysis of transportation alternatives was made a condition precedent to the investment of more than $100 million for a fixed guideway project.

Capital Assistance Grants

During fiscal year 1976, a total of $1.479 billion in capital assistance grants was approved by UMTA. During the transition quarter, an additional $476 million in capital funding was approved.

For the 15 month period under discussion, 183 new projects received initial approval and 106 ongoing projects received additional funding. As of September 30, 1976, the cumulative total of all capital grant funding since the beginning of the program (early in 1965) amounted to $6.5 billion for 841 separate projects.

The program of discretionary capital grant assistance was the source of the greatest amount of capital grant funding. In fiscal year 1976, a total of $1.092 billion was approved for 103 new and 89 amended projects, while in the transition quarter there were 20 new and 17 amended projects totaling $253.9 million. (These totals also include grants for capital equipment and facilities for use by private nonprofit organizations to provide transportation for the elderly and handicapped and advance land acquisition loans to enable preservation of existing rights-of-way for possible future mass transit use.) The total commitment, as of September 30, 1976, was $5.7 billion in 763 separate projects.

The Federal-Aid Highway Act of 1973 permitted the use of funds for mass transit which had previously been earmarked exclusively for highway purposes. There are two sources of such funds, the urban systems programs of the Federal Highway Administration and the transfer of funds from previously programed but now canceled interstate highway construction. During the year, a total of $23.4 million in urban systems funds went for mass transit purposes (making a cumulative total of $73.7 million since fiscal year 1974), and $553 million was transferred from canceled interstate highway construction (making a total of $669.8 million to date).

Under UMTA's formula grant assistance program, there were 27 capital grant approvals in fiscal year 1976 with a total commitment of $26 million and 10 approvals during the transition quarter with a total funding of $6.7 million. The cumulative total from the beginning of the program in fiscal year 1975 through the end of the transition quarter was $41.3 million in 51 separate projects.

In fiscal year 1976, of the total capital funding of $1.479 billion, $111 million went to urbanized areas of under 1 million. The remainder, amounting to 92 percent of the capital funding, went to urbanized areas of over 1 million population. In the transition quarter, out of total capital grants of $476.2 million, $82.2 million went to urbanized areas of under 1 million. UMTA maintained a policy of funding all meritorious and eligible requests for capital support from these smaller urbanized areas.

The rail mode of transit (rapid, light, and commuter rail) received $1.104 billion in capital grant funds in fiscal year 1976, or 74.7 percent of the total. Bus transit received $361.6 million, or 24.5 percent, and ferry and miscellaneous types of urban transit received $12.9 million, or 0.8 percent. In the transition quarter, the rail mode total was $343.5 million, or 72.2 percent, the bus mode total was $68 million or 14.2 percent, and the ferry and miscellaneous category received $65 million or 13.6 percent of the total funding commitment.

A total of $430 million was approved during the 15 month period for bus related projects, including new buses, bus garages, and support equipment for bus fleets. Nearly 3,700 new buses and 11 new garages will be built as a result of these grants. Among the grants for bus equipment and facilities were several especially interesting ones:

- Metropolitan Seattle received $50 million for a major modernization and improvement program. This brings the total federal commitment to this program to $86.3 million. The system has ordered 150 new articulated buses as part of a total replacement and expansion program involving 605 new buses, new garages and maintenance shops, and numerous other improvements.
- The Connecticut Department of Transportation received a grant of $26.7 million to enable it to acquire one of the nation's last large privately owned transit systems.
- Portland, Oregon, received a grant in the amount of $12 million for construction of a downtown transit mall along Fifth and Sixth Avenues.

There were also a number of significant grants for modernization, extension, or construction of rail systems:

- New York City received $106 million for the 63rd Street subway construction, making a total commitment to that project to date of $331.7 million.
- In Boston, $27 million (from interstate transfer funds) were made available for the South Cove Tunnel extension of the Orange Line and $21 million for the new South Quincy station on the Red Line extension to South Braintree.
- Atlanta's new rapid transit system was approaching its peak construction period, and UMTA provided $236.5 million in additional construction funds to reach a funding total of $506.4 million. An additional $294 million is pledged under the funding agreement.
- For Baltimore, an additional $100 million grant brought the total commitment to $248.8 million. An additional $323 million is pledged under the funding agreement.

- The Washington Metrorail system is now being funded in large part through interstate substitutions, and during the year $399 million in such funding was approved.
- UMTA made a commitment in principle to proceed with development of a rail transit system in Miami, and the first funding of $15.2 million for engineering was approved in March 1976.
- In similar fashion, Buffalo also received $8 million for engineering and a commitment in principle of $269 million to assist in construction of a light rail type rapid transit facility.
- A commitment in principle was made to New Jersey for $400 million in federal funds for rail improvements in the northern part of the state.

In addition to major projects such as these, funds continued to be made available for large-scale and urgently needed modernization programs on existing rapid transit systems. For example — $54 million was approved for the Chicago area to permit purchase of 70 new cars to be used on the Illinois Central Gulf and Rock Island routes, replacing equipment built in the 1920's; and an interstate transfer grant provided $46.3 million for acquisition of the Boston and Maine Railroad's Boston area commuter lines and rolling stock, along with funding for numerous improvements.

Departmental studies had suggested that UMTA carry out a near-term urban demonstration of automated guideway transit systems. The Senate Appropriations Committee also urged this action. As a result, UMTA announced, in April 1976, a competitive capital grant demonstration program to deploy automated people mover systems in selected American cities.

As UMTA continued its commitment to large scale rapid transit development, several new concepts emerged. One was a pledge by grantees that work would go on unhindered by strikes (which often cause long delays and large inflationary cost increases). Buffalo was the first grantee to make such a commitment.

Operating Assistance Grants

Commitments in fiscal year 1976 under the formula grant program for operating assistance amounted to $364.7 million for 178 projects. In the transition quarter, an additional 30 operating assistance grants totaling $52 million were awarded. A cumulative total of $559.3 million in operating grants has been approved since the beginning of the program.

The federal funding of transit operating expenses, now in its third year, can only provide a very small share of the national total. As a matter of fact, less than 20 percent of this cost is presently being met by UMTA. However, federal funding of operations has permitted continued transit operations in cities with critical financial problems.

Transportation Planning

UMTA's technical studies program provides planning funds for states and for metropolitan planning organizations. Substantial amounts of these funds are passed through to transit agencies and local governments. These funds, informally apportioned to approximately 285 grantees, support transit related planning studies and contribute to the development of transportation improvement programs at the local level.

A wide range of planning, programing, and management activities can be undertaken with technical study grants, including the preparation of long range transportation plans and short range improvement programs to provide a solid technical basis for transit investments and improved transit operations and management. Plans and programs designed to improve the mobility of elderly and handicapped persons, particularly wheelchair users and the semiambulatory, also can be prepared.

Grants to states are made to help increase state support for transit, to coordinate related state services, and to develop legislation, policies, and statewide plans for improving public transportation.

During the year, a total of $46.8 million in technical studies grants was awarded, with approximately 87 percent of the funds going to metropolitan planning organizations and transit operators, 12 percent going to states to support statewide and local planning, and one percent going to other categories.

Planning activities sponsored by UMTA were affected by three important policy and regulatory statements. As discussed below, these policies concerned planning and programing requirements (including transportation system management activities), elderly and handicapped services, and alternatives analyses for major mass transportation investments.

Planning and Programing. The joint UMTA and Federal Highway Administration regulations issued in September 1975 required transportation system management plans as a major element of transportation planning, programing, and implementation. The purpose of this requirement was to stimulate greater efficiency and productivity of existing transportation facilities by encouraging more systematic management. The transportation system management requirement puts a premium on finding less costly ways of satisfying transportation demand, increasing transportation system efficiency, reducing auto congestion, and improving traffic flow. Transportation system management improvements will affect both capital and operating costs

of public transportation.

UMTA and the Federal Highway Administration have initiated a number of activities aimed at improving transportation system management planning, including conducting national conferences. The regional offices of UMTA have received special guidance on ways to assist local agencies in developing transportation system management plans. Several urbanized areas have been selected for study as prototypes of how transportation system management plans could best be prepared and implemented. These studies will identify activities and institutional arrangements which are supportive of transportation system management planning and should provide insights into the solutions to problems which complicate transportation system management planning.

Elderly and Handicapped Services. The Urban Mass Transportation Act of 1964, as amended in 1970, declared, as a national policy, that elderly and handicapped persons have the same right as other persons to use mass transportation facilities and services. The Act directed that special efforts be made in the planning and design of public mass transportation facilities and services so that the availability of mass transportation which elderly and handicapped persons can use will be assured. The Act also directed that all federal programs offering assistance in the field of mass transportation contain provisions implementing this policy.

The UMTA and Federal Highway Administration planning regulations issued in September 1975 require that urban transportation planning activities include special efforts to plan public mass transportation facilities and services for the elderly and handicapped. On April 30, 1976, UMTA issued additional regulations which require special efforts in planning, programing, and implementing public mass transportation projects and services, with particular emphasis on services for wheelchair users and other semiambulatory persons. The regulations set deadlines for the implementation of the special efforts requirements, supplied advisory information, and gave examples of the types of projects or levels of effort which would satisfy the special efforts requirement.

Development of further guidance for the review of elderly and handicapped transportation planning activities was also initiated. Periodic workshops, elderly and handicapped research studies, and special reviews of transportation services planned for and delivered to elderly and handicapped persons have been conducted. A large planning study currently underway will provide technical assistance to local planners as they attempt to satisfy the special efforts requirements of the reulations.

Alternatives Analyses. On September 22, 1976, UMTA published a formal statement of policy regarding major urban mass transportation investments. This policy prescribes, as a condition of eligibility for federal assistance, that areas contemplating fixed guideway transit projects carry out an analysis of alternative ways of meeting their transportation needs. The policy statement had been published in a draft form 13 months earlier; as a result, a number of cities throughout the nation were already engaged in analyses approximating the policy guidelines.

Alternatives analyses were completed during the year in Denver, Buffalo, and Miami and were the basis for UMTA decisions on their requests for engineering funds. UMTA rejected the Denver recommendation for a rail transit system, holding that the analysis failed to justify the proposed investment and that the corridor transportation needs could be served satisfactorily by a more modest bus investment. UMTA ultimately elected to support project engineering and environmental work for projects emerging from the other two analyses. A completed analysis from Los Angeles was received late in the year. It resulted in an offer of support for engineering, environmental, and technical studies for various parts of the recommended package. Analyses in a number of other cities were in various stages of progress at the end of the year, and others were expected to begin during fiscal year 1977. These studies will all conform to the new procedures.

UMTA's activities during the year also included advance work, site visits, and decisions on the downtown people mover program, which was expected to influence planning work during fiscal year 1977.

Planning Techniques

UMTA's planning methodology and technical support program develops and disseminates new computerized and manual techniques to assist federal, state, and local agencies in the planning, implementation, and operation of urban transportation systems. These techniques, collectively called the urban transportation planning system, support efficient use of both national and local transportation resources and the evaluation of proposed system improvements.

The goal of this activity is to provide essential support for the planning assistance and capital grant programs by continually improving the local and federal ability to plan and operate urban transportation systems. The planning methodology and technical support research and development activity invests about $3 million per year to provide better planning methods for local use, which in turn yields more cost effective planning, and thus provides a greater return for capital investments.

The results of the activity fall into three general

categories — training for local professionals, manuals to aid planners and operators, and computer programs for transportation planning and decision making. To date, over 40 courses related to transportation have been conducted.

Technology Development

During fiscal year 1976, UMTA initiated several activities which focus on the critical steps that follow the development of new technology but which precede its introduction into public service. They included the development of procurement procedures to be used in purchasing advance design buses, initiation of a formal program of railcar standardization, rationalization of terms and conditions affecting railcar purchases, and studies of the potential application of life-cycle cost procedures to the procurement of transit vehicles and equipment.

The need to explore these and other issues affecting the delivery system for new technology was emphasized by many participants at the first UMTA research and development priorities conference, held in February 1976, which attracted representatives of many of UMTA's constituent groups, including transit operators, planners, consultants, manufacturers, academics, and government officials at all levels. Another key need identified at the conference was improved communication concerning UMTA programs and the results of projects undertaken by UMTA and by others. Increased emphasis on information exchange should begin to be evident in fiscal year 1977.

The research and development priorities conference was one of many participatory processes initiated during the year in an attempt to involve as wide a representation as possible in making UMTA policy on technological issues. For example, a public hearing was held in May 1976 to provide a forum for discussing the technical, social, and economic considerations affecting the issue of whether UMTA should mandate a minimum floor height for city transit buses purchased with UMTA financial assistance.

Paratransit Vehicles

Paratransit vehicles fall in the range between private automobiles and conventional fixed route mass transit. They include jitneys, taxis, dial-a-ride systems, minibuses, carpools, and vanpools. Two UMTA developed paratransit vehicles were exhibited in New York City at the Museum of Modern Art, which sponsored a design competition for improved taxis. Favorable reaction to the UMTA vehicles centered on accommodation of wheelchair passengers and ease of access and roominess within a wheelbase whose dimensions are no greater than those of a compact auto. A secondary objective of the paratransit vehicle project, minimal pollutant emissions, was sought through steam propulsion; but penalties in fuel consumption and cost necessitated refitting the two vehicles with gasoline engines prior to further testing.

Rail Vehicles

UMTA tested two rapid transit cars with flywheel energy storage systems at the Transportation Test Center and in revenue service in New York City. The energy storage system is designed to capture the kinetic energy which is normally dissipated as heat during braking and to release it in the form of electrical energy during acceleration. Preliminary test results indicated that the energy storage feature could save as much as 20 to 30 percent of the electrical energy used by conventional cars in similar service. The results of this experiment are embodied in the advanced concept train, which is currently under development. The prototype cars of the advanced concept train incorporate an integral energy storage propulsion system using the same basic technology as that demonstrated in the energy storage cars, along with numerous other features designed to reduce the life cycle cost of ownership and operation.

Automated Guideway Transit

The nation's first operational automated transit system in urban transit service, the Morgantown, West Virginia, personal rapid transit system, began regular service in October 1975. The success of the Morgantown system, which exceeded its design goal of 95 percent service availability, was a key factor in UMTA's decision to approve a capital grant for completion of the five-station system at Morgantown. Its success also encouraged UMTA to proceed with a demonstration of downtown people mover systems to provide service that could revitalize city centers.

Thirty-eight cities submitted proposals in a competitive site selection process announced in April 1976. Detailed evaluation of these proposals, still in progress as the year ended, indicated that many cities could strengthen local efforts to revitalize the city center by installing downtown people movers.

Transportation Demonstration Projects

A total of $8.4 million was made available during the year for transit demonstration projects. Several projects involved the use of taxicabs; other projects included

vanpools, a transit mall, and UMTA's first waterborne transit demonstration project. In addition, sites were selected for demonstrations of auto restricted zones and transportation pricing techniques. Eleven new demonstrations were funded as well as ongoing projects and studies which will lead to future demonstrations.

Ongoing paratransit projects in Knoxville, Tennessee, and Rochester, New York, made considerable progress. The city of Knoxville has passed a resolution establishing a city department of transportation. It will act as a transportation broker to continue and expand efforts that have had such outstanding results as to reduce the portion of employees arriving in single occupant vehicles from 65 percent to 18 percent at one major employer.

In Rochester, the computerized dispatching system is now working full time and ridership is improving as the result of the improved service. However, the future of demand responsive service is in question due to the high perceived cost and to reduced local funds caused by the New York financial crisis.

In Xenia, Ohio, and Danville, Illinois, the demonstration projects show good promise of developing into permanent transit services operated by private companies. The service models developed in these relatively small communities (under 50,000) look very promising for many other communities.

Following is a review of several other major demonstration projects.

Mercer County, New Jersey (Social Service Agency Coordination: $195,960) — This is a pilot project to initiate the coordination and consolidation of transportation resources for service to the transportation disadvantaged in Mercer County. A phased approach to coordinating systems and funding will begin with centralized information and referral, dispatching, and brokering of existing services. Participating in the program will be Mercer Metro, local taxi companies, and health and social service agencies.

Lawrence, Massachusetts (A User Subsidy: $422,061) — This is one of four planned user subsidy projects designed to test variations in user subsidies. Lawrence has nine taxi companies and a privately operated city bus system. Tickets purchased at reduced fares by eligible elderly and handicapped persons can be used on these services, with operators redeeming them at full value from the project. This project will test the ability of such a mechanism to improve the mobility of these target groups.

Tri-state Regional Planning Commission, New York City (Elderly and Handicapped Planning: $109,340) — This grant will develop a detailed implementation plan for a demonstration of coordinated transportation services for the handicapped in a pilot area of New York City. The objectives are — to develop a model of coordinated taxi and delivery service for the handicapped; to pool existing financial resources; and to coordinate or incorporate existing service to the maximum feasible extent.

Transportation Remuneration Incentive Program, West Virginia (New Service Development: $720,000) — A key element in the transportation remuneration incentive program is the development of new service and the establishment of transportation regions where none presently exist. The program will include start-up costs for primary and feeder networks in three of these new regions.

Vera Institute, New York City (Elderly and Handicapped Service: $175,700) — This project is a multifunded program involving UMTA, the Administration on Aging, and the Department of Health, Education, and Welfare. It will demonstrate a demand responsive door to door transportation service for a target group of 25,000 elderly and disabled residents of Manhattan's lower east side. The project will be operated by a newly formed nonprofit corporation which will maintain close cooperation with current transportation providers and service agencies in the area.

Montgomery, Alabama (A User Subsidy: $465,449) — This user subsidy project will test the effectiveness of a user subsidy in improving the mobility of the elderly and handicapped. It also will examine the quality of service provided to elderly and handicapped citizens and will assess how efficiently the available public transportation alternatives are being used. Montgomery is served by a 22-bus municipally owned transit system, four large taxi companies (with 21 to 24 vehicles each), and several smaller taxi companies.

Transportation Assistance Incorporated, Washington, D.C. (Inner City Service Improvements: $73,000) — This study will address the transportation needs of the inner city poor and will develop demonstration designs and site selection criteria. The study will consider techniques, such as circulatory service, jitneys, and shared-ride taxis, which may improve inner city transportation for the urban poor.

Westport, Connecticut (Integrated Taxi Service: $610,000) — This project resulted from a feasibility study funded in fiscal year 1975. It will demonstrate the integration of a range of conventional and paratransit services including shared-ride taxi, fixed-route service, and special user group service. The Westport Transit District will function as a transportation broker in coordinating the various types of service to be provided, including contracting with a taxi operator to provide the paratransit services.

St. Bernard Parish, Louisiana (Taxi Feeder: $325,350) — Thisproject, an integrated taxi and fixed-

oute transit demonstration, will use taxicabs to carry passengers to line haul bus routes. This will allow an increase in mobility for areas not served by fixed-route transit with no increase in transit equipment and will improve the productivity of the combined bus – taxi service.

Norfolk, Virginia (Subscription Van: $490,000) — This project will incorporate a subscription van program into the activities of an existing areawide public transportation system. The Tidewater Transportation Commission will serve as the agent in establishing a van program for service between various locations in the Tidewater area and the major naval facilities which currently have limited public transportation service.

Marin County, California (Subscription Van: $338,000) — The Golden Gate Bridge Highway and Transportation District will serve as an agent in promoting the use of vanpools. The project will demonstrate several innovative approaches to vanpool organization and operation. Fifty vans owned by the district will be leased to interested companies. After a limited time, the company will be required to lease its own van. The original van will then be used to form an additional pool, whereupon the process will be repeated, thereby using a limited number of vans to stimulate formation of a larger number of vanpools. An additional $346,000 will be added to this project in fiscal year 1978.

Carnegie-Mellon University (Transportation Broker: $63,060) — Carnegie-Mellon University will design a paratransit demonstration for implementation in fiscal year 1977. The objective is to develop and promote alternatives to the private automobile. The paratransit services will be coordinated by a ride-sharing agent, matching demand for services with the supply. It is anticipated that this brokerage function will be conducted through a nonprofit organization.

The Aerospace Corporation (Subscription Bus: $75,675) — This study, completed in October 1976, assessed the feasibility of a new concept of multiple trip subscription bus service. The employment center bus service made use of staggered work hours in a large employment center to permit two or more trips per bus in each peak period, greatly improving vehicle productivity. It appears that the concept has widespread applicability and may lead to a fiscal year 1977 demonstration in the Los Angeles area.

Arlington County, Virginia (Integrated Taxi: $77,200) — This study will develop plans for the demonstration of a shared-ride taxi system. The shared-ride taxi system is a promising method for improving transportation, particularly in the low density areas where fixed-route service may be economically impractical. The technique lowers fares by increasing vehicle productivity. This project will examine the market for the shared-ride service and will develop a zone fare structure and a management system.

New York City (Over the Water: $995,000) — This project will assess the applicability of new high-speed over the water craft for public transportation in the New York City area. It will determine consumer and community acceptance of the service as well as the economics of operation and operational problems. The project will include substitution of the high speed service for the Staten Island ferry during nighttime hours, morning and evening commuter service, airport service, and summer service between several recreational areas.

Nassau County, New York (Integrated Taxi: $346,995) — This paratransit demonstration will develop improved shared-ride and subscription services to be operated by a private taxi company. The service, which will include feeder service to transit lines, will serve as a model for other urban areas in the integration of private and public transit service and in the optimal use of taxi services.

Information Dissemination

A considerable amount of effort was expended during the year on techniques to disseminate information about local transit innovations. A series of six regional seminars was held on the subject of small city transit operations. Most state departments of transportation have since distributed the developed information rather widely and have conducted additional seminars, often making use of the seminar movie.

The transportation demonstration program is tracking efforts to improve public transportation service across the U.S. The data base which has been established is on a time sharing computer and is updated regularly with the help of UMTA field personnel. The data base is helpful in locating appropriate sites for projects and in spotting opportunities to document more fully any noteworthy locally sponsored innovations.

As transit costs increase and the pressure on local budgets becomes more severe, UMTA has found an increasing awareness at the local level of the importance of using existing resources more efficiently. This is being reflected in the interest shown in the demonstration program. More cities are making requests to serve as project sites and the demands for information continue to increase.

Civil Rights

During fiscal year 1976, UMTA maintained its lead position within the Department in terms of equal em-

ployment opportunity. At the end of the year, 147 (34.5%) of its 426 employees were from minority groups and 181 (42.5%) were female. At the end of fiscal year 1975, 127 (32.0%) of its 397 employees were from minority groups and 169 (42.6%) were female.

In carrying out its civil rights compliance responsibilities, UMTA found nine grant recipients to be in noncompliance. Among these, four were brought into compliance by the end of the fiscal year. In addition, UMTA's review of companies with whom UMTA grantees contract revealed 25 to be in noncompliance. All of these were brought into compliance by the end of the year.

UMTA placed great emphasis on its civil rights educational outreach endeavors during fiscal year 1976. Six affirmative action workshops for transit managerial personnel and board members were made possible by an UMTA grant. These sessions, held throughout the country, reached approximately 300 top transit decision making personnel.

UMTA continued its emphasis on minority business programs. Minority contracts awarded during the year amounted to $2,470,000 out of a total of $22,700,000. In fiscal year 1975, minority contracts amounted to $200,000 out of a total of $33,100,000.

Funds are also awarded to educational institutions under the UMTA program, including those with predominately minority enrollment. During fiscal year 1976, $95,278 was awarded to Atlanta University Center and $127,886 to North Carolina Agricultural and Technical State University.

During fiscal year 1976, UMTA made plans to place in operation preaward reviews of potential grantees' minority business enterprise and equal opportunity affirmative action plans. These reviews will supplement a similar preaward review of applicants in the area of nondiscrimination in the provision of federally assisted services and benefits. The preaward reviews will enable UMTA grantees to avoid problems, rather than reacting to them, and will place UMTA among the vanguard agencies in the federal government in protecting civil rights.

Saint Lawrence Seaway Development Corporation

The Saint Lawrence Seaway Development Corporation was created in 1954 to construct the U.S. facilities for the Saint Lawrence Seaway project. Since 1959, when the Seaway opened to navigation by ocean-going ships, the Corporation has been charged with the operation and maintenance of that part of the Seaway between Montreal and Lake Erie which is within the territorial limits of the U.S.

Together with a counterpart Canadian agency, the Corporation operates locks and channels and provides vessels transiting the Seaway from Montreal to Lake Erie with vessel traffic control assistance that includes management of ship movements. It also provides and maintains aids to navigation.

Besides providing a safe, efficient, and effective artery for maritime commerce, the Corporation has the responsibility of encouraging the development of traffic throughout the entire Seaway, so as to contribute to the development of the region.

The Corporation is headed by an Administrator who is appointed by the President, with the advice and consent of the Senate, and who serves a fixed seven-year term. There also is a five-man advisory board whose members are appointed by the President, with the advice and consent of the Senate.

Unlike most government agencies, the Corporation is self sustaining. All operation, maintenance, and administrative costs are paid from revenues obtained from tolls charged to vessels which pass through the system.

Cargo shipments through the Montreal to Lake Ontario section of the Seaway rose 13 percent during 1976, to 54.4 million tons. This represented the second highest volume in the Seaway's 18-year history. Bulk cargo was up 12 percent, to 49.9 million tons, but the biggest increase was in general cargo, which jumped 25 percent over the previous year, to 4.5 million tons. Within the general cargo category, the most notable gains were registered by iron and steel manufactures (up 63 percent) and by container tonnage (up 23 percent).

Seaway Corporation revenues during 1976, principally from tolls, climbed 16 percent over the previous year, to $7.3 million. Of that total, $2 million was returned to the U.S. Treasury for payment of the bonded debt required to construct the Seaway. That debt has now been reduced to $116.5 million.

Seaway highlights in 1976 included — the latest actual navigation season closing (December 24), which entailed moving over 50 ships through the severest early winter weather conditions and heavy ice in memory; the initiation of the first scheduled weekly express service for container cargo between Seaway ports and northern Europe; the joint efforts of the Seaway Corporation and the U.S. Coast Guard in containing and recovering oil from a major oil spill on the Saint Lawrence River; Seaway Corporation and U.S. Coast Guard cosponsorship of a port development and shippers' conference in Dearborn, Michigan; and ongoing navigation season extension work by the Seaway Corporation and other participating members of the multi-agency Winter Navigation Board.

According to the Seaway Act of 1954, the Corporation is required to submit to the President, for transmission to Congress, a separate annual report. The most recent report may be obtained free from: The Office of Communications, Saint Lawrence Seaway Development Corporation, P.O. Box 520, Massena, New York 13662.

Materials Transportation Bureau

On July 7, 1975, the Materials Transportation Bureau (MTB) was established within the Department of Transportation, reporting to the Secretary of Transportation. The Bureau was given responsibility for pipeline safety and hazardous materials functions which had previously been carried out within the Office of the Secretary. MTB also was given a number of new responsibilities which were vested in the Secretary by the Hazardous Materials Transportation Act of 1974.

Approximately 2.5 billion tons of hazardous materials are transported every year by rail, highway, water, air, pipeline, or a combination of modes. For example, nearly 40 percent of liquefied petroleum gas is transported by a combination of highway and pipeline facilities. Each day, more than 250,000 shipments of hazardous materials are transported; and there are more than 45,000 carriers who handle such shipments. Imports and exports of hazardous materials amount to $8.8 billion annually.

Pipelines, long recognized as an efficient mode of material transport, have been used for 150 years to move basic energy materials such as oil and natural gas. Recent technological and economic advances have led to their growing usage for transporting liquefied petroleum gases, chemicals, anhydrous ammonia, and even coal. Pipelines transport more than one-quarter of the total U.S. freight tonnage and more than one-half of the nation's energy supply, while serving approximately 44.3 million customers.

MTB was established to coordinate the Department's increasing responsibilities for safe shipment of hazardous materials by all modes of transportation and for safe transportation of gases and hazardous liquids by pipeline. Continuing expansion of the intermodal transportation of hazardous materials and of pipeline usage means greater efforts are needed to ensure public safety. MTB is responsible for assuring that adequate domestic and international programs are available to meet those needs.

The MTB Director is delegated authority to exercise the powers and to perform the duties vested in the Secretary of Transportation by the following statutes:

- Natural Gas Pipeline Safety Act of 1968, as amended (49 U.S.C. 1671 et seq).
- Mineral Leasing Act, as amended (P.L. 93–153, 30 U.S.C. 185).
- Deepwater Port Act of 1974 (P.L. 93–627, 33 U.S.C. 1520) relating to the establishment, enforcement, and review of regulations concerning the safe construction, operation, or maintenance of pipelines on federal lands and the outer continental shelf.
- Section 5 of the International Bridge Act of 1972 (P.L. 92–434) as it relates to certain pipelines.
- Title I, Transportation Safety Act of 1974, (P.L. 93–633, 49 U.S.C. 1801–1811) except for certain excluded delegations.
- Dangerous Cargo Act of 1940 (46 U.S.C. 170).
- Those sections of Title 18 U.S.C. which relate to liquid pipelines and to transportation of explosives, radioactive materials, and other dangerous articles.
- Those sections of the Federal Aviation Act of 1958, as amended, which relate to regulations governing transportation of hazardous materials by air.

Organization

Within MTB, the Office of Pipeline Safety Operations carries out the detailed pipeline safety functions. The Office of Hazardous Materials Operations carries out those functions relating to the transportation of hazardous materials by the various modes other than pipeline.

The MTB maintains a central reporting system for incidents involving release of hazardous materials in transportation, and gas and liquid pipeline accidents, failures, and leaks. Data gained from the incident reports and from investigations and technical studies are used in amending regulations where needed and in directing more effective compliance programs.

Hazardous Materials

MTB derives its authority for regulating hazardous materials in transportation from Title I of the Transportation Safety Act of 1974, known as the Hazardous Materials Transportation Act. The Act gives the Secretary of Transportation comprehensive safety regulatory authority over hazardous materials in transportation.

The Hazardous Materials Transportation Act grants discretionary authority to the Secretary to identify as hazardous any material which "may pose an unreasonable risk to health and safety or to property."

The Act also extends the Secretary's hazardous materials regulatory and enforcement powers to include manufacturers and reconditioners of containers and packaging materials used in the transportation of hazardous materials. This allows greater control over hazardous materials before they enter transportation, and is expected to reduce the number of incidents caused by improper packaging.

Regulatory Program. The MTB regulatory program involves coordination with the Department's other operating administrations, who participate in formulating the hazardous materials regulations which affect their respective modes of transportation. During 1976, MTB's regulatory program focused on the assessment of economic, environmental, and safety impacts. As of September 30, 1976, there were 13 proposed rules open for comment or pending final disposition, and 868 exemptions were being considered.

During its first year, MTB completed a number of important hazardous materials rulemaking actions. They represent not only significant improvements in the safety system, but also significant adjustments in the regulations to remove unwarranted restraints on transportation of certain low-hazard materials in commerce.

- The most significant rulemaking action was the consolidation of the Department's hazardous materials regulations for air, water, highway, and rail into a single volume. This consolidation, combined with improvement of the hazardous materials regulations pertaining to documentation, package marking, labeling, and vehicle placarding, resulted in elimination of significant operating restrictions that were applicable to many billions of dollars worth of consumer goods annually.
- The Department's hazardous material regulations were also amended to prescribe certain requirements for compressed gas cylinders manufactured outside the U.S. The new regulations adopted for such cylinders establish adequate safeguards for their use in the U.S.
- The hazardous materials regulations were reissued in conformance with the requirements of the Hazardous Materials Transportation Act. This provided the necessary legal connection between the regulations and the Act, so that the provisions of the Act and the authority vested in the Secretary of Transportation by the Act can be implemented.
- Procedural regulations were issued to implement the preemption provisions of of the Hazardous Materials Transportation Act; to prescribe procedures to be followed by MTB in carrying out its enforcement responsibilities under the Act; and to add several general procedural provisions covering MTB's hazardous materials public docket room, service of documents, and subpoenas.
- By 1975, more than 700 exemptions had been issued authorizing the transportation of explosives and flammable liquids to remote locations, such as construction sites of the Alaskan pipeline. Early in fiscal year 1976, a rulemaking proceeding was initiated to eliminate the need for such exemptions by publishing as regulations the safety standards that were the bases for their issuance.
- Another significant rulemaking action established a new set of exemption procedures, as required by the Hazardous Materials Transportation Act. The new exemption procedures require that a safety analysis be submitted in support of each examption application. In addition, MTB implemented a program to allow conversion of individual exemptions to regulations of general applicability. These amendments permit incorporation into the regulations of innovations that have been shown to be effective and safe.
- Amendments were published to provide more flexibility and clarity in the specifications for applying head shields to tank cars and to provide for tank cars with head shields to display a distinctive specification marking.
- Other amendments prohibited the transportation of gallium metal in liquid form aboard aircraft, specified requirements for packaging solid gallium aboard aircraft, and specified packaging requirements for the transportation of both solid and liquid forms of gallium by surface transportation.

Compliance. MTB conducts inspections to ensure compliance with its regulations. In addition, educational activities and training programs are carried out to help the modal administrations, other government agencies, the regulated industries, and the general public to understand and to comply with the regulations.

The Hazardous Materials Transportation Act extended the Secretary's authority to regulate container manufacturers and those who repair, recondition, test, furnish, or distribute containers for use in the transportation of hazardous materials. MTB exercises this authority through compliance surveys and through inspections of container manufacturers and shippers, of whom there are more then 30,000. MTB inspects facilities and records, identifies and reports to management on discrepancies, and explains regulations to industry personnel. Violations of the regulations are referred to the appropriate Departmental elements for further action.

In cooperation with the Department's Transportation Safety Institute, MTB has expanded its training activities to include courses for inspectors, industry personnel, and emergency services personnel. The Institute is currently developing an intermodal course for industry, an advanced course for air transportation

inspectors, and a seminar for state agency personnel.

In other efforts to improve compliance with hazardous materials regulations, MTB conducts seminars at various locations around the country. Some seminars are directed to increasing industry awareness of the regulations. Others focus on emergency services and provide assistance to fire, police, civil defense, and other emergency response personnel.

During the year, MTB conducted 18 intermodal seminars on hazardous materials transportation, 12 emergency service seminars, 7 seminars focusing on regulation changes of a broad scope, and 2 oriented toward the needs of other federal agencies. A total of 5,880 persons attended these seminars.

A variety of handout materials have also been developed. Over 800,000 pieces of such literature were distributed during the year, in response to requests from the public and from other government agencies. MTB also has prepared or made available films on subjects such as hazardous materials labeling, classification, and packaging; emergency response; and radioactive materials.

Safety Performance. During the year, a total of 15,156 unintentional releases of hazardous materials were reported. These incidents resulted in 31 fatalities and 1,043 injuries plus millions of dollars in property damage. Statistical evidence indicates that there has been a trend toward increased carrier reporting of incidents, which can be attributed, in part, to awareness of the reporting requirements of the regulations.

Research and Development. Hazardous materials research and development activities included — (1) development of performance oriented packaging specifications; (2) systematic reevaluation of the hazardous materials classification systems; (3) development of techniques for systematic economic, environmental impact, and safety analyses relative to rulemaking actions; and (4) support of programs related to MTB responsibilities under the Hazardous Materials Transportation Act.

There were a number of notable research and development accomplishments during the year.

- A final report was prepared on toxic point determination of selected hazardous materials. This report contains the toxic point calculations for 57 substances. Toxic point is a parameter presently under consideration for use internationally as an indicator of the degree of hazard associated with toxic materials in transportation.
- A large amount of materials classification test data was obtained. This data aided rulemaking significantly by — (1) verifying the classification of a number of commodities; (2) establishing cutoff points between regulated and non-regulated commodities; (3) enabling the determination of multiple hazards and their relative degrees; (4) providing basic data for a U.S. position paper for United Nations regulations (e.g., toxic points, and toxicity – skin corrosion validation data); (5) verifying the classification of information submitted by petitioners; (6) providing a true assessment of toxic hazards for emergency response; (7) permitting the introduction of representative new entries in the commodity list; and (8) filling gaps that presently exist in the list.
- The first phase of a comprehensive study to establish a systematic basis for future rulemaking on the use of plastics for packaging hazardous materials was completed. This project is also investigating the reuse of plastic packaging.
- A draft final report was prepared on a study to develop performance oriented packaging specifications for boxes and cases. This project is part of an effort to develop such criteria for all packaging used for the transportation of hazardous materials. Other current projects involve drums, pails, boxes, and carboys (large glass bottles in protective casings). This work will establish a technical data base to support development of rulemaking to convert the present design oriented specifications to a performance oriented basis.
- Final reports were received from the states of Illinois, New York, Texas, and Missouri on studies involving the surveillance of radioactive materials shipments. Part of a cooperative program between the Department of Transportation, the U.S. Nuclear Regulatory Commission, and certain states, these studies provide a valuable indication of the degree of compliance with regulations for transporting radioactive materials, as well as data on the radiation exposure of transportation workers during routine handling of radioactive shipments.
- Also completed was a study which represents the first comprehensive effort to quantify the severity of the accident environments in rail, highway, and air transportation. Data from this study will provide a base for assessing the risk associated with the use of various packaging systems for highly hazardous materials.
- Several tests were completed and reports were provided under a program for basic metallurgical testing and investigation of cylinders. The data derived from these projects have contributed to the development of a draft international standard for high pressure cylinders, assisted in investigations of incidents involving the failure of pressure cylinders, and provided a technical basis for the issuance of several important exemptions and rulemaking actions involving certain types of cylinders.

International Cooperation. MTB represents the U.S. on the United Nations Committee of Experts on

the Transport of Dangerous Goods. The committee works to promote standards for the safe transportation of hazardous materials. Through such bodies as the United Nations, the International Atomic Energy Agency, and the Joint Group of Experts on the Scientific Aspects of Marine Pollution, MTB exchanges information with other nations on both hazardous materials and pipeline safety. Such efforts help to promote international trade by eliminating needless duplication or conflict in regulatory requirements.

Pipeline Safety

MTB is responsible for the federal gas pipeline safety regulatory activities mandated by the Natural Gas Pipeline Safety Act of 1968. Regulatory responsibility under this Act covers more than 2,100 operators of the nation's one and one-half million mile gas pipeline system. MTB also has safety responsibility for some 250,000 miles of liquid product pipelines. These pipelines transport crude oil, petroleum products, liquefied petroleum gases, and anhydrous ammonia.

MTB safety standards for gas and liquid pipelines cover the design, construction, testing, inspection, operation, and maintenance of pipeline facilities. The pipelines themselves are monitored by and the regulations are enforced by MTB personnel.

MTB has the authority to issue safety regulations for the transportation of gases or hazardous liquids by pipeline. MTB also reviews and assures compliance with these regulations. It manages the federal grants to states which conduct intrastate gas pipeline safety programs; and it collects, compiles, and analyzes pipeline safety and operating data. It conducts training programs for government and industry personnel; it directs contract studies into research on pipeline safety; and it disseminates pipeline safety information to state agencies, industry, technical groups, equipment manufacturers, and the public.

The Department has exclusive federal safety authority over all gas pipeline systems which are subject to the jurisdiction of the Federal Power Commission under the Natural Gas Act. The Department also has overall responsibility for the safety regulation of those intrastate gas pipeline systems covered by the Natural Gas Pipeline Safety Act. All 50 States, plus Puerto Rico and the District of Columbia, now are participating in the federal – state gas pipeline safety program. A state may assume responsibility for enforcing the federal gas pipeline safety standards with respect to intrastate facilities through the filing of a certificate or by entering into an agreement with the Department to assist in the enforcement of the federal safety standards. A certifying state agency may adopt additional or more stringent standards (compatible with the federal standards) for those intrastate gas pipeline facilities under its jurisdiction.

In addition to the gas pipeline safety regulatory programs, MTB has been assigned responsibility for liquid pipeline safety. Some 250,000 miles of liquid pipeline transport crude oil, petroleum products, liquefied petroleum gases, and anhydrous ammonia. During fiscal year 1976, MTB was also actively involved in a number of new responsibilities relating to the pipeline safety requirements of the Deepwater Port Act of 1974, the Mineral Leasing Act of 1920, as amended, and the Transportation Safety Act of 1974.

Accidents and Casualties. Both the gas and liquid pipeline safety regulations require that operators make reports of certain liquid pipeline accidents and gas pipeline failures to MTB. The gas reporting regulations were established in 1970; the liquid pipeline safety standards and reporting requirements were established in 1969. Summary tables of pipeline accident, fatality, and injury data are included in the Appendix to this report. During the year, 73 fatalities and 445 injuries resulting from 1,780 gas pipeline failures were reported by gas pipeline operators. In the same period, five deaths and four injuries resulting from 281 accidents were reported by liquid pipeline operators.

To determine the effectiveness of the federal safety standards and of the monitoring and compliance programs, significant pipeline failures and accidents are investigated by MTB and by those state agencies cooperating in the gas pipeline safety program. During the year, MTB participated in nine field investigations, in cooperation with state agencies and the National Transportation Safety Board. Results of most such investigations are available through National Transportation Safety Board reports or through investigation studies made available by MTB through the National Technical Information Service.

Federal Pipeline Safety Standards. During the year, MTB issued several amendments to the federal pipeline safety standards to more fully utilize the benefits of advanced technology and new engineering designs.

- A March 1976 amendment brought up to date the list of referenced documents which are incorporated in the gas and liquid pipeline safety standards.
- In March 1976, MTB issued an amendment to the gas pipeline safety standards to require an operator to provide protection whenever the support for a buried cast-iron pipeline is disturbed (by the operator or otherwise).
- Another amendment clarified the existing requirement that a gas pipeline operator prepare and execute an emergency plan. The purpose of the amendment is to

require that operators take prompt effective action in responding to an emergency involving or likely to involve a gas pipeline facility.

- On June 4, 1976, MTB issued an amendment which will allow gas pipeline operators to use a means other than a mechanical leak clamp for sealing cast iron caulked bell and spigot joints subject to pressures of 25 psig or more. The revision also establishes performance standards for the use of other sealing methods and materials.
- Also in June, MTB amended both the gas pipeline safety standards and the liquid pipeline safety standards to provide more appropriate safety requirements for steel pipe which is subjected to field bending. The amendment also made the standards for bending pipe in gas and liquid service consistent, in so far as practicable.
- On August 9, 1976, MTB amended the gas pipeline safety standards to modify many of the design, construction, testing, operation, and maintenance regulations as they relate to offshore gas pipeline facilities. The amendment also enlarges the scope of the regulations by deleting the exemption for gathering lines located offshore. The regulations now apply to the offshore gathering of gas downstream from the outlet flange of each facility on the outer continental shelf where hydrocarbons are produced or where produced hydrocarbons are first separated, dehydrated, or otherwise processed, whichever facility is farther downstream. The purpose of the amendment was to more clearly define the applicability of the gas pipeline safety standards to offshore gas pipelines and to better assure the safe operation of those pipelines.
- Similarly, on the same date, MTB issued an amendment to the liquid pipeline safety standards, modifying many of the design, construction, testing, operation, and maintenance regulations as they relate to offshore transportation by pipeline of hazardous materials, petroleum, or petroleum products. The amendment also enlarged the scope of the regulations by deleting the exemption for gathering lines located offshore. The regulations now apply to all offshore pipelines which are located downstream from the outlet flange of each facility on the outer continental shelf where hydrocarbons are produced or where produced hydrocarbons are first separated, dehydrated, or otherwise processed, whichever facility is farther downstream. The purpose of the amendment was to more clearly define the applicability of the regulations to offshore liquid pipelines and to better assure the safe operation of those pipelines.

In the past, jurisdictional questions have occurred between the Department of Transportation and the Department of the Interior with regard to oil and gas pipelines on the outer continental shelf. In June 1976, a memorandum of understanding was published regarding the responsibilities of each for offshore pipelines and related matters on the outer continental shelf.

State Gas Pipeline Safety Activities. The federal – state gas pipeline safety program involves two types of cooperative agreements, known as 5(a) and 5(b) agreements. Under a 5(a) agreement, the state adopts and enforces the federal safety standards. Under a 5(b) agreement, the state monitors pipeline operations to determine if they conform to federal standards, but enforcement remains a federal responsibility. In 1976, 45 state jurisdictions participated under 5(a) agreements. This included all of the states with the exception of those who have entered into 5(b) agreements. The District of Columbia and Puerto Rico also had 5(a) agreements, and there were two agencies in Florida with such agreements. The eight states which had 5(b) agreements in 1976 were Alaska, Delaware, Hawaii, Louisiana, Massachusetts, Vermont, Nebraska, and New Jersey.

In 1975, 41 states applied for federal financial assistance in their gas pipeline safety programs, and the total financial aid allocated was $1,442,381. State participation continued to grow in 1976, as 43 state agencies were allocated a total of $1,650,000. State agencies continued to augment their programs with additional full-time engineers or inspectors for their pipeline safety staffs. They also increased their recognition of the importance of employee attendance at technical pipeline safety courses sponsored by MTB. Such improvements in state agency gas pipeline safety activities make the nationwide program more effective.

In 1975, MTB initiated a series of regional meetings of representatives from the states and other jurisdictions cooperating with the Department. Meetings were held in each of the five regions in 1975 and 1976. State agencies attending these meetings selected a chairman and vice-chairman, who plan and schedule activities for the meeting and also attend a national liaison conference conducted each year in Washington. Recommendations from these regional meetings assist MTB in developing the gas pipeline safety and grant programs.

Compliance Activities. During the year, MTB increased its efforts to assure that its pipeline safety standards were enforced properly, by augmenting the staffs of four new regional offices in Washington, Atlanta, Kansas City, and San Francisco, in addition to the office previously established in Houston. The purpose of the compliance program is to assure that gas and liquid pipeline operators meet the requirements of the federal pipeline safety regulations. In 1975, MTB conducted 204 safety evaluations of interstate and in-

trastate gas pipeline operators. In addition, 62 monitoring inspections were made of liquid pipeline operators. Enforcement and compliance monitoring continued at a comparable pace in 1976.

Pipeline Safety Training. In fiscal year 1976, MTB offered four pipeline safety courses for state and industry personnel, through the Department's Transportation Safety Institute.

- Two sessions of a 40-hour course on safety evaluation of gas pipeline systems were conducted. The course is designed to provide personnel having responsibility for gas pipeline safety regulation at the federal and state level with a clear understanding of the requirements of the Act, plus the basic information needed to enable them to do an effective job in enforcing the gas pipeline regulations.
- Seven sessions of a 5-day gas pipeline failure investigation course were conducted, to help states increase their capabilities to investigate pipeline failures.
- Eight sessions of a 40-hour course on evaluation of gas pipeline corrosion control systems were conducted for state agency personnel.
- Two-day industry seminars on safety requirements for gas pipeline systems were held at various locations throughout the country. During the year, 25 such seminars were held for industry and state agency personnel as well as for safety representatives from other federal government agencies.

Research and Development. Pipeline safety research in fiscal year 1976 focused on those areas where field experience, investigations, and monitoring activity indicated a strong potential for improving pipeline safety technology. During the year, the Department — (1) directed contract studies for analysis and management of leak and failure reporting data; (2) continued to use the services of the National Bureau of Standards in testing pipeline specimens and components to assist in determining causes of pipeline failures; and (3) completed a series of four gas distribution safety studies relating to the use of plastic pipe, to tools and procedures for in-place evaluation of pipeline distribution systems, to properties and effectiveness of gas odorants, and to an overall review of gas distribution safety.

MTB currently has underway a study of state and industry programs for the prevention of damage to pipelines by outside forces. (More than half of the pipeline accidents and failures which cause deaths and injuries result from outside force damage.) Other technical studies being conducted in major problem areas include — safety practices for offshore pipelines; certain critical elements in the storage and handling of liquefied natural gas; problems of hydrogen stress cracking and hydrogen embrittlement; stress corrosion cracking; and corrosion fatigue. At the end of the year, plans were being developed for a study of pipelines in the Arctic environment.

Technology Sharing. Pipeline safety information is disseminated regularly to state agencies, the pipeline industry, professional and technical groups, contractor and labor organizations, equipment suppliers, the press, and the public through monthly publication of an advisory bulletin and through direct mailing of reprints of regulations and notices of proposed rulemaking. During the year, assistance was provided for a number of pipeline safety articles presented in technical publications and the general news media; and reports of pipeline technical studies and investigations were made available through the National Technical Information Service. Additionally, some 1,500 copies of the annual report to Congress on pipeline safety and annual summaries of liquid pipeline safety accident data were provided in response to public requests. MTB personnel attended more than 50 public meetings this year to present information on federal regulations and safety program activities.

Coordination with Other Federal Agencies. The Department maintains continuous liaison with the National Transportation Safety Board in its pipeline safety activities. Particular attention is devoted to National Transportation Safety Board pipeline accident and failure reports, investigations, and pipeline safety recommendations; to dissemination of information to industry and the public concerning National Transportation Safety Board reports and recommendations; and to cooperative efforts to solve the problems of outside force damage to pipelines. During the year, MTB also maintained contact with the Federal Power Commission on technical and operational facets of the federal gas pipeline safety standards and on proposed amendments. The Federal Power Commission has provided one of the government members on the Technical Pipeline Safety Standards Committee since the committee was established. The Department of Transportation continues joint participation with the Department of the Interior on activities relating to Alaska pipeline developments, particularly in the monitoring of design, construction, and operating plans for the Trans-Alaska crude oil pipeline and in the reviewing of plans and environmental impact statements for pipelines proposed for transporting gas from the Alaskan north slope.

MTB also maintains liaison with the Department of Labor, the Federal Energy Administration, the Environmental Protection Agency, the Department of Housing and Urban Development, the Department of State (particularly relating to pipelines crossing between the United States and Canada), and the Council on Environmental Quality. During fiscal year 1976, the

Department of Transportation cooperated with all other executive departments and appropriate federal agencies regarding the actions required by each respective department or agency to fulfill the requirements for reports of leaks and safety problems involving pipelines on federal lands.

Technical Pipeline Safety Standards Committee. A Technical Pipeline Safety Standards Committee has been established to review and report on the technical feasibility, reasonableness, and practicability of proposed gas pipeline standards and amendments. The revised committee charter, which became effective on November 10, 1975, covers the committee's purpose, background, objectives, and procedures; the provision for public participation; the availability of records; the compensation and duration of the committee; its administrative support; and a public interest statement. The new charter was published on January 29, 1976. On November 19 and 20, 1975, the committee met in Washington, D.C., and reviewed proposed amendments to the gas pipeline safety standards in the following areas — incorporating industry standards by reference; protecting cast-iron pipelines; preparing emergency plans; and defining gathering lines. The committee also met in New Orleans, Louisiana, on March 30 and 31, 1976, to discuss proposed gas pipeline safety standards on the subjects of offshore pipeline facilities, caulked bell and spigot joints, and pipe bending limitations.

Trans-Alaska Oil Pipeline. The Department of Transportation took a number of actions to assure that the completed crude oil pipeline across Alaska would meet the federal liquid pipeline safety standards before going into operation. Since the inception of the Trans-Alaska oil pipeline project, the Department of Transportation has cooperated with the Department of the Interior with regard to monitoring the design, construction, and operating plans for the pipeline. In July 1976, an onsite task force, consisting of MTB engineers and Department of Transportation welding experts, began monitoring both construction of the line and a remedial weld program.

Appendix

EVALUATION OF THE EFFECTIVENESS OF THE UNITED STATES RAILWAY ASSOCIATION AND THE CONSOLIDATED RAIL CORPORATION

The Regional Rail Reorganization Act of 1973, as amended ("RRRA"), requires the Secretary of Transportation, as part of his annual report to Congress, to submit a report on the effectiveness of the United States Railway Association ("USRA") and the Consolidated Rail Corporation ("Conrail") in implementing the purposes of the RRRA.

USRA and Conrail have been effective in reorganizing the railroads in the region into a system capable of providing adequate and efficient rail service to the region and to the national transportation system pursuant to the purposes and objectives of the RRRA. Principal activities during the year included:

- Submission to Congress of the final system plan for restructuring the railroad system in the Midwest and Northeast region;
- Commencement of operations by Conrail over the restructured system; and
- Provision of financing to meet the needs of Conrail and other railroads pursuant to the RRRA.

Final System Plan

USRA's plan for reorganizing the bankrupt railroads in the Midwest and Northeast was submitted to Congress on July 26, 1975, and became effective on November 19, 1975, after Congressional review. The plan's preferred railroad system included a Conrail structure of approximately 15,000 miles, acquisition by the Chessie System of 2,000 miles of Erie Lackawanna and Reading lines, and acquisition by the Southern Railway of trackage on the Delmarva Peninsula. This configuration was deemed to represent the best balance between providing a financially self-sustaining system, meeting the transportation needs of the region, promoting competition, and improving passenger service in the region — all with minimum government involvement and taxpayer expense. Implementation of this preferred structure depended upon the Chessie System and Southern Railway acquisitions of roadway. However, this implementation was not realized because necessary labor agreements, mutually acceptable to the railroads and the labor organizations involved, could not be reached.

As a result, it was necessary to adopt the recommended alternative structure in the final system plan. This configuration, identified as "Unified Conrail", consisted of approximately 17,000 miles of the lines of the Penn Central, Erie Lackawanna, Lehigh Valley, Reading, Central of New Jersey, and Lehigh and Hudson River railroads. (The major portion of the Ann Arbor Railroad was acquired by the state of Michigan.) Unified Conrail was projected to be the most viable configuration of all those considered by USRA in the final system plan. However, the railroad system under this configuration did not include the level of competition in the Northeast which was included in the original recommendation. To alleviate this drawback, in part, USRA was able to complete an agreement with the Delaware and Hudson Railroad Company ("D&H") which provided for the expansion of D&H service, thus providing additional competition for Conrail.

Conrail Operations

On April 1, 1976, Conrail began operations over the Unified Conrail structure. The transition to the new system was smooth; and, in its first few months of operation, Conrail made a good beginning toward the goal of providing adequate and efficient rail service to the region and to the national transportation system. Conrail also appeared to be making satisfactory progress towards attaining the overall operating and financial results projected in the final system plan. Many operating improvements were made in advance of final system plan projections; and, in light of the early results, the final system plan expectations of Conrail profitability in 1979 appeared attainable.

Among Conrail's accomplishments in its first five months of operation was a substantial start on a planned ten-year $4.9 billion track upgrading program. Between April 1 and August 31, 1976, Conrail installed 2.3 million new ties and 338 miles of welded rail and surfaced 4,663 miles of track. It also began work on overhauling and upgrading its rolling stock, with major overhauls of 347 locomotives and 6,249 freight cars. In the area of service improvements, a new computer system was installed to allow quicker tracing and faster billing for freight cars; rail and freight yard operations were consolidated; and new trains were run on new schedules. These and other improvements have resulted in faster shipping times for customers and have reduced costs for Conrail.

Financing

In order to meet the financial needs of Conrail and other railroads, several of the financial assistance provisions of the RRRA were put into effect by USRA during the year.

Loans amounting to $31 million were provided to Conrail prior to April 1, 1976, to finance organization

and administration expenses and material acquisitions needed to enable a smooth start-up of Conrail operations.

USRA worked closely with the Department of Transportation in completing a financial assistance program for the maintenance, improvement, and acquisition of assets designated for conveyance to Conrail under the final system plan. Expenditures of $290 million were made under this program prior to April 1, 1976.

Jointly with Conrail, USRA implemented a loan program under section 211(h) of the RRRA providing for payment of certain of the obligations incurred prior to April 1, 1976, by the railroads in reorganization. By providing for prompt payment of these obligations, the program was intended to permit an orderly transition to Conrail operations. However, a need to have complex legal issues resolved by the courts resulted in delays in payment of a portion of these obligations.

USRA and Conrail executed a financing agreement under which USRA will carry out its authorization to invest up to $2.1 billion in Conrail securities. In providing such funds to Conrail, USRA and the Finance Committee of the USRA Board of Directors will have a continuing responsibility for monitoring Conrail's performance. Such monitoring is intended to protect the government's investment by ensuring that Conrail is capable of attaining the financial and operating results projected in the final system plan and that it can become self sustaining without requiring a federal investment in excess of the $2.1 billion authorized.

Under the provisions of the RRRA, which authorized loans to solvent railroads connecting with RRRA carriers in reorganization and needing financial assistance to avoid bankruptcy, USRA provided assistance to the Missouri-Kansas-Texas Railroad Company ("MKT") and the D&H. Drawdowns of $10 million, the remainder of a $19 million loan approved earlier, were provided to the MKT. The MKT began repayment of the loan on October 1, 1976. A loan to the D&H in the amount of $28 million was approved in March 1976. One of the purposes of this loan was to provide the necessary financing for the expansion of D&H service, as previously mentioned. Drawdowns by the D&H under the approved loan amounted to $20 million as of September 30, 1976.

USRA's and Conrail's programs to date are consistent with the intent and purposes of the RRRA. The further improvements to be made by these organizations in rehabilitating the physical facilities, improving the operations and structure, and restoring the financial stability of the railroad system in the Midwest and Northeast will make a significant contribution to ensuring that the public interest in a strong railroad system for the nation is fully served.

NATIONAL RAILROAD PASSENGER CORPORATION

The National Railroad Passenger Corporation (Amtrak) was established by the Rail Passenger Service Act of 1970. The Act was the result of a joint decision by the Executive Branch and Congress to relieve the nation's predominantly freight carrying railroads of the financial burden of providing intercity rail passenger service. According to railroad reports to the Interstate Commerce Commission, that service was causing them to lose hundreds of millions of dollars every year.

Thus, Amtrak was established as a mixed ownership (private and public) corporation whose basic system was prescribed by the Secretary of Transportation and whose operations were supported by federal funds. The federal subsidy was to be an interim measure, because the stated goal of the legislation was to establish intercity rail passenger service on a for profit basis. In short, Amtrak was an experiment to see if a company with no concern other than transporting intercity passengers by rail could operate at a profit.

Establishment of an integrated nationwide intercity rail passenger service with reliable, comfortable, and convenient service, starting from the declining service that was present at the time of Amtrak's conception, has been a formidable task. The Amtrak experiment has produced some positive results, including an increase in number of riders (ridership) and in passenger miles. However, its economic performance has been somewhat disappointing.

Figure 5 depicts the overall Amtrak performance through fiscal year 1976. It shows that, despite some fluctuations, Amtrak ridership, revenues, and passenger miles have gone up steadily. Unfortunately, costs have gone up at a higher rate than revenues. Ridership during the fiscal year 1972–76 period increased 23 percent and revenues increased 75 percent, but costs increased 120 percent. As a result, the systemwide average deficit per passenger mile doubled during the fiscal year 1972–76 period, and fiscal year 1976 revenues covered only 40 percent of costs.

To some extent, the increasing deficit simply reflects added service requirements and the continuing deterioration of the overage fleet of rolling stock which Amtrak inherited from the railroads. However, there is a need to understand *all* of the components and causes of the cost increases. Amtrak's overall performance can be somewhat better understood by reviewing the three general categories of Amtrak service: (1) long distance trains (routes of more than 500 miles); (2) short distance trains (routes of less than 500 miles); and (3) the northeast corridor.

Over the five years of Amtrak operations, the long

distance trains have dominated system revenue, system passenger miles, system train miles, and system costs, although long distance train ridership has been declining since fiscal year 1973.

The long distance trains continue to have a much lower average deficit per revenue passenger mile than the short distance trains. On an output basis (deficit per revenue passenger mile), long distance trains are actually between the northeast corridor and short distance trains, but the magnitude of their absolute costs is the major factor in the size of the system deficit.

The short distance trains, as a group, consistently demonstrate the worst financial performance. They have experienced steady growth in ridership, revenue, and passenger miles, but these positive achievements have been more than offset by cost increases. Nevertheless, short distance trains are so small a portion of the total system that their impact on total revenue and total costs is relatively slight, and they may be significant as a feeder service for the long distance trains.

The northeast corridor continues to be the best performer, although both its relative and absolute financial performances are, like the system as a whole, gradually declining. Nevertheless, at the end of fiscal year 1976, it was carrying substantially more than half the system passengers and contributing only slightly more than a quarter of the system costs.

While a look at the financial performance of the three categories of service is helpful in understanding Amtrak performance, general revenue and cost data for each route is essential for route planning decisions. Amtrak is steadily increasing its capability in this area, and applications of revenue and cost data in route planning should assist in controlling costs.

Though Amtrak has not become self sustaining, it has played an important role in the national transportation picture. Furthermore, the preservation and utilization of intercity rail passenger service, an energy efficient mode of transportation, can be expected to increase in importance in a time of energy constraints. Therefore, it is essential to develop the ability to control rail passenger costs and to preserve rail passenger service as a viable transportation alternative.

TABLE I U.S. DEPARTMENT OF TRANSPORTATION PROGRAM LEVELS, BUDGET AUTHORITY, OBLIGATIONS, AND OUTLAYS, FISCAL YEAR 1976 AND THE TRANSITION QUARTER[4]

(dollars in millions)

Organization	*Program Levels*[1]	*Budget Authority*	*Obligations*	*Outlays*
Office of the Secretary	77	77.1	74.1	76.6
United States Coast Guard	1,387	1,386.5	1,346.0	1,301.5
Federal Aviation Administration	2,773	2,879.2	2,807.0	2,614.6
Federal Highway Administration	6,415	8,456.7	6,397.9	8,243.5
National Highway Traffic Safety Administration	211	267.5	207.6	189.3
Federal Railroad Administration	589	696.2	560.1	480.7
National Railroad Passenger Corporation (AMTRAK)	601	601.2	474.3	471.8
Urban Mass Transportation Administration	2,489	946.6[2]	2,488.8	1,609.1
Saint Lawrence Seaway Development Corporation	—	—	6.5	(3.6)
Materials Transportation Bureau	2[3]	1.6[3]	1.9[3]	1.9[3]
Subtotals	14,544	15,312.6	14,364.2	14,985.4
Deduct Proprietary Receipts from the Public	—	(46.8)	—	(46.8)
TOTALS	14,544	15,265.8	14,364.2	14,938.6

[1] A COMBINATION OF BUDGET AUTHORITY, OBLIGATIONS, AND ADMINISTRATIVE RESERVATIONS WHICH IS THE BEST BUDGETARY INDICATOR OF THE DEPARTMENT'S ACTIVITIES
[2] AUTHORITY FOR USE IN YEAR ENACTED AND SUBSEQUENT YEARS
[3] EXCLUDES $5.2 MILLION WHICH WAS INCLUDED UNDER THE OFFICE OF THE SECRETARY
[4] FIGURES GIVEN ARE FOR THE FULL 15 MONTH PERIOD FROM JULY 1, 1975 THROUGH SEPTEMBER 30, 1976

TABLE II U.S. DEPARTMENT OF TRANSPORTATION GRANTS BY GRANT PROGRAM, FISCAL YEAR 1976 AND THE TRANSITION QUARTER[1]

Program	*(Dollars in thousands)*
Airports (Planning/Development)	417,559
Boating Safety	6,890
Federal-Aid Highways	6,370,822
Gas Pipeline Safety	1,650
Highway Traffic Safety	145,408
Railroad Safety	510,508
Urban Mass Transportation	2,380,064
TOTAL GRANT AWARDS	9,832,901

[1] FIGURES GIVEN ARE FOR THE FULL 15 MONTH PERIOD FROM JULY 1, 1975 THRDUGH SEPTEMBER 30, 1976

TABLE III U.S. DEPARTMENT OF TRANSPORTATION AUTHORIZED FULL-TIME PERMANENT POSITIONS, FISCAL YEAR 1976

Office of the Secretary	2,172
United States Coast Guard[1]	44,709
Federal Aviation Administration	58,033
Federal Highway Administration	5,054
National Highway Traffic Safety Administration	881
Federal Railroad Administration	1,654
Urban Mass Transportation Administration	480
Saint Lawrence Seaway Development Corporation	193
Materials Transportation Bureau	—[2]
TOTAL	113,146

[1] INCLUDES 6,811 CIVILIANS AND 37,898 MILITARY.
[2] EXCLUDES 108 POSITIONS WHICH WERE INCLUDED UNDER THE OFFICE OF THE SECRETARY

TABLE IV U.S. DEPARTMENT OF TRANSPORTATION FULL-TIME MINORITY AND FEMALE EMPLOYMENT, 1968-76

Year	*Total*	*Minority*	*%*	*Total*	*Female*	*%*
1968	58,556	5,032	8.6	50,773	9,354	18.4
1969	58,726	4,586	7.8	52,400	8,856	16.9
1970	62,278	5,216	8.4	56,805	9,979	17.6
1971	66,918	6,063	9.1	60,047	10,411	17.3
1972	66,219	6,372	9.6	61,368	10,773	17.6
1973	65,227	6,248	9.6	61,851	10,316	16.7
1974	65,098	6,773	10.4	62,723	10,898	17.4
1975	68,241	7,647	11.2	64,588	11,373	17.6
1976	71,679	8,989	12.5	65,758	11,745	17.8

NOTES:
1. MINORITY EMPLOYMENT FIGURES AND TOTALS EXCLUDE EMPLOYEES IN HAWAII, GUAM, AND PUERTO RICO.
2. FEMALE EMPLOYMENT FIGURES AND TOTALS COVER WHITE COLLAR POSITIONS ONLY FOR THE YEARS 1972-75 AND GENERAL SCHEDULE POSITONS ONLY FOR ALL OTHER YEARS.
3. MINORITY DATA ARE AS OF JUNE 30 FOR 1968 AND 1969 AND AS OF MAY 31 FOR ALL OTHER YEARS.
4. FEMALE DATA ARE AS OF JUNE 30 FOR 1968 AND 1969, AS OF MAY 31 FOR 1970, 1971, AND 1976, AND AS OF OCTO8ER 31 FOR 1972-75.
5. THE SOURCE OF ALL DATA FOR 1972-75 IS THE CIVIL SERVICE COMMISSION.

TABLE V SUMMARY OF REPORTED GAS PIPELINE FAILURES AND CASUALTIES, CALENDAR YEARS 1970-75

	Distribution					*Transmission and Gathering*				
		Fatalities		*Injuries*			*Fatalities*		*Injuries*	
Calendar Year	*No. of Failures*	*Employees*	*Non Employees*	*Employees*	*Non Employees*	*No. of Failures*	*Employees*	*Non Employees*	*Employees*	*Non Employees*
1970	676	1	20	32	170	343	1	0	8	8
1971	875	6	36	36	329	410	2	1	14	10
1972	884	2	26	32	262	409	3	3	23	13
1973	893	1	32	48	285	471	1	1	3	16
1974[1]	1,017	1	19	31	283	460	1	3	7	13
1975[1]	979	0	8	29	191	394	5	1	8	9

[1] INCLUDES DATA FROM TELEPHONIC REPORTS TO THE OFFICE OF PIPELINE SAFETY (OPS) WHICH WERE NOT INCLUDED IN FAILURE/CASUALTY DATA FOR YEARS 1970-1973.

TABLE VI SUMMARY OF REPORTED GAS PIPELINE FAILURES AND CASUALTIES, BY TYPE AND CAUSE, CALENDAR YEAR 1975

	Total No. of Failures	Fatalities		Injuries	
		Employees	Non Employees	Employees	Non Employees
Distribution					
Total	979	0	8	29	191
Subtotal by Cause:					
Corrosion	94	0	1	6	23
Damage by Outside Forces	744	0	5	7	119
Construction Defect or Material Failure	78	0	0	1	25
Other Causes	63	0	2	15	24
Transmission and Gathering:					
Total	394	5	1	8	9
Subtotal by Cause:					
Corrosion	44	3	1	2	4
Damage by Outside Forces	237	0	0	0	5
Construction Defect or Material Failure	88	*	0	5	0
Other Causes	25	1	0	1	0
Gas Industry Totals	1,373	5	9	37	200

TABLE VII SUMMARY OF REPORTED LIQUID PIPELINE ACCIDENTS AND CASUALTIES, CALENDAR YEARS 1968-75

Year	Accidents	Deaths	Injuries	Loss of Commodity (Barrels)
1968	499	11	32	392,588
1969	403	5	4	343,691
1970	347	4	21	521,849
1971	308	1	8	245,057
1972	309	8	19	360,654
1973	273	7	8	379,365
1974	256	10	11	293,643
1975	255	7	15	319,423

TABLE VIII U.S. COAST GUARD COMMERCIAL VESSEL SAFETY DATA, FISCAL YEAR 1976 AND THE TRANSITION QUARTER

Category	*FY 1976*	*TQ*
1. U.S. commercial vessels undergoing construction, average monthly totals:		
a. Major self-propelled vessels	107	99
b. Small self-propelled vessels	290	277
c. Non-self-propelled	163	147
2. U.S. commercial vessels under U.S. inspection laws:		
a. Major self-propelled vessels	1,157	1,173
b. Small self-propelled vessels	4,027	4,137
c. Non-self-propelled	5,189	5,217
3. U.S. commercial vessels not inspected but subject to U.S. safety requirements:		
a. Self-propelled vessels	32,352	32,850
b. Non-self-propelled	19,651	20,386
4. Foreign flag vessels subject to U.S. safety requirements	458	620
5. Fixed offshore structures subject to U.S. safety requirements.	2,300	2,300
6. Annual number applicants for licenses and seamen's documents:		
a. Major vessel licenses, original and upgrade	6,802	1,456
b. Small vessel licenses, original and upgrade	10,162	2,843
c. License renewals	14,197	3,444
d. Seamen's document entry ratings	14,197	3,444
e. Seamen's document qualification endorsements	7,303	1,460
7. Annual number of marine incidents reported for investigation:		
a. Marine casualties	8,190*	—
b. Recreational vessel deaths	836	261
c. Suspension/revocation personnel actions	2,973	868
d. Violations of law and regulation	2,022	723
8. Annual number of admeasurement applications:		
a. Recreational vessels	5,134	1,422
b. Self-propelled commercial vessels	2,931	778
c. Non-self-propelled commercial vessels	1,582	310
9. Annual number of vessel documentation transaction applications, total	179,098	47,587
10. Annual activity of shipping commissioners and number of seamen's records maintained:		
a. Number of full and partial crew sign-ons and sign-offs	8,066	1,976
b. Active seamen's records	110,000	110,000

* INCLUDES THE TRANSITION QUARTER

TABLE IX U.S. COAST GUARD FINANCIAL STATEMENT, FISCAL YEAR 1976

Appropriated Funds	*Funds Available*[1]	*Total Obligations*	*Unobligated Balances*[2]
Operating Expenses	$ 738,053,776	$ 727,675,471	$ 10,378,305
Acquisition, Construction, and Improvements	228,986,413	131,045,769	97,940,644
Alteration of Bridges	6,553,760	6,553,760	-0-
Retired Pay	123,650,000	122,158,117	1,491,883
Reserve Training	32,100,000	31,737,723	362,277
Research, Development, Test, and Evaluation	19,553,328	12,731,365	6,821,963
State Boating Safety Assistance	6,297,336	6,070,749	226,587
Pollution Fund	15,279,666	6,776,302	8,503,364
TOTAL APPROPRIATED FUNDS	1,170,474,279	1,044,749,256	125,725,023
Reimbursements			
Operating Expenses	16,000,000	13,365,934	2,634,066
Acquisition, Construction, and Improvements	893,028	532,777	360,251
Reserve Training	25,000	12,351	12,649
Research, Development, Test, and Evaluation	4,303,449	704,232	3,599,217
Pollution Fund	57,193	57,193	-0-
TOTAL REIMBURSABLE FUNDS	21,278,670	14,672,487	6,606,183
Trust Funds			
Coast Guard General Gift Fund	25,724	7,165	18,559
Surcharge Collection, Sale of Commissary Stores	278,241	147,987	130,254
Coast Guard Cadet Fund	5,395,051	5,395,051	-0-
TOTAL TRUST FUNDS	5,699,016	5,550,203	148,813
Intra Governmental Revolving Funds			
Coast Guard Supply Fund	53,535,056	52,129,134	1,405,922
Coast Guard Yard Fund	34,225,600	28,139,733	6,085,867
TOTAL REVOLVING FUNDS	87,760,656	80,268,867	7,491,789

Accrued Gross Expenditures	*Total*	*Direct*	*Reimbursable*
Operating Expenses	720,199,729	705,303,252	14,896,477
Acquisition, Construction, and Improvements	85,899,922	85,329,118	570,804
Alteration of Bridges	3,256,392	3,256,392	-0-
Retired Pay	121,976,127	121,976,127	-0-
Reserve Training	31,123,726	31,111,375	12,351
Research, Development, Test, and Evaluation	17,564,117	17,328,841	235,276
State Boating Safety Assistance	4,275,593	4,275,593	-0-
Pollution Fund	7,120,027	7,062,834	57,193
Coast Guard General Gift Fund	6,960	6,960	-0-
Surcharge Collections, Sale of Commissary Stores	147,987	-0-	147,987
Coast Guard Cadet Fund	5,395,051	-0-	5,395,051
Coast Guard Supply Fund	54,448,580	-0-	54,448,580
Coast Guard Yard Fund	30,447,045	-0-	30,447,045
TOTAL	1,081,861,256	975,650,492	106,210,764

TABLE IX U.S. COAST GUARD FINANCIAL STATEMENT, FISCAL YEAR 1976 (continued)

[1] FUNDS AVAILABLE INCLUDE UNOBLIGATED BALANCES BROUGHT FORWARD FROM PRIOR YEAR APPROPRIATION AS FOLLOWS:

Operating Expenses	
Reimbursements	$ 127,662
Acquisition, Construction, and Improvements	
Appropriated Funds	62,886,413
Reimbursements	361,778
Alteration of Bridges	53,760
Research, Development, Test, and Evaluation	
Appropriated Funds	953,328
Reimbursements	97,449
State Boating Safety Assistance	507,336
Pollution Fund	2,380,177
Coast Guard General Gift Fund	17,143
Surcharge Collections, Sale of Commissary Stores	94,145
Coast Guard Cadet Fund	-0-
Coast Guard Supply Fund	26,670
Coast Guard Yard Fund	1,201,449
TOTAL	$ 68,707,310

[2] UNOBLIGATED BALANCES REMAIN AVAILABLE FOR OBLIGATION IN TRANSITION QUARTER AS FOLLOWS:

Operating Expenses	$ 13,012,371
Acquisition, Construction, and Improvements	98,300,895
Alteration of Bridges	-0-
Retired Pay	1,491,883
Research, Development, Test, and Evaluation	10,421,180
Reserve Training	374,926
State Boating Safety Assistance	226,587
Pollution Fund	8,503,364
Coast Guard General Gift Fund	18,559
Surcharge Collections, Sale of Commissary Stores	130,254
Coast Guard Supply Fund	1,405,922
Coast Guard Yard Fund	6,085,867
TOTAL	$139,971,808

TABLE X U.S. COAST GUARD FINANCIAL STATEMENT, THE TRANSITION QUARTER

Appropriated Funds	*Funds Available*[1]	*Total Obligations*	*Unobligated Balances*[2]
Operating Expenses	222,665,244	220,363,188	2,302,056
Acquisition, Construction, and Improvements	114,100,644	22,325,277	91,775,367
Alteration of Bridges	1,625,000	1,625,000	-0-
Retired Pay	34,791,883	32,741,773	2,050,110
Reserve Training	10,937,277	10,529,971	407,306
Research, Development, Test, and Evaluation	11,471,963	5,555,898	5,916,065
State Boating Safety Assistance	1,676,587	786,455	890,132
Pollution Funds	9,254,663	8,542,521	712,142
TOTAL APPROPRIATED FUNDS	406,523,261	302,470,083	104,053,178
Reimbursements			
Operating Expenses	3,630,912	3,463,950	166,962
Acquisition, Construction, and Improvements	400,682	227,177	173,565
Reserve Training	6,918	6,918	-0-
Research, Development, Test, and Evaluation	772,255	312,899	459,356
Pollution Funds	(57,193)	(57,193)	-0-
TOTAL REIMBURSABLE FUNDS	4,753,574	3,953,691	799,883
Trust Funds			
Coast Guard General Gift Fund	19,954	1,647	18,307
Surcharge Collections, Sale of Commissary Stores	169,727	30,337	139,390
Coast Guard Cadet Fund	568,086	568,086	-0-
TOTAL TRUST FUNDS	757,767	600,070	157,697
Intra Governmental Revolving Funds			
Coast Guard Supply Fund	14,475,933	13,057,356	1,418,577
Coast Guard Yard Fund	10,756,335	8,000,448	2,755,887
TOTAL REVOLVING FUNDS	25,232,268	21,057,804	4,174,464

Accrued Gross Expenditures	*Total*	*Direct*	*Reimbursable*
Operating Expenses	202,517,732	200,179,910	2,337,822
Acquisition, Construction, and Improvements	55,752,899	55,660,329	92,570
Alteration of Bridges	2,892,243	2,892,243	-0-
Retired Pay	32,672,699	32,672,699	-0-
Reserve Training	10,750,707	10,743,789	6,918
Research, Development, Test, and Evaluation	5,049,449	4,751,567	297,882
State Boating Safety Assistance	754,307	754,307	-0-
Pollution Fund	7,128,695	7,185,888	(57,193)
Coast Guard General Gift Fund	626	626	-0-
Surcharge Collections, Sale of Commissary Stores	30,337	-0-	30,337
Coast Guard Cadet Fund	568,086	-0-	568,086
Coast Guard Supply Fund	12,424,583	-0-	12,424,583
Coast Guard Yard Fund	7,206,108	-0-	7,206,108
TOTAL	337,748,471	314,841,358	22,907,113

TABLE X U.S. COAST GUARD FINANCIAL STATEMENT, THE TRANSITION QUARTER (continued)

[1] FUNDS AVAILABLE INCLUDE UNOBLIGATED BALANCES BROUGHT FORWARD FROM 30 JUNE 1976 AS FOLLOWS:

Operating Expenses	
Appropriated Funds	$ 10,378,305
Reimbursements	2,634,066
Acquisition, Construction, and Improvements	
Appropriated Funds	97,940,644
Reimbursements	360,251
Reserve Training	
Appropriated Funds	362,277
Reimbursements	12,649
Alteration of Bridges	-0-
Research, Development, Test, and Evaluation	
Appropriated Funds	6,821,963
Reimbursements	3,599,217
Retired Pay	1,491,883
State Boating Safety Assistance	226,587
Pollution Fund	8,503,364
Coast Guard General Gift Fund	18,559
Surcharge Collections, Sale of Commissary Stores	130,254
Coast Guard Cadet Fund	-0-
Coast Guard Supply Fund	1,405,922
Coast Guard Yard Fund	6,085,867
TOTAL	$139,971,808

[2] UNOBLIGATED BALANCES REMAIN AVAILABLE FOR OBLIGATION IN FISCAL YEAR 1977 AS FOLLOWS:

Operating Expenses	$ 166,962
Acquisition, Construction, and Improvements	91,923,019
Research, Development, Test, and Evaluation	6,375,421
State Boating Safety Assistance	890,132
Pollution Fund	712,142
Coat Guard General Gift Fund	18,307
Surcharge Collections, Sale of Commissary Stores	139,390
Coast Guard Supply Fund	1,418,577
Coast Guard Yard Fund	2,755,887
TOTAL	$104,399,837

TABLE XI FEDERAL AVIATION ADMINISTRATION FINANCIAL STATEMENT, AS OF SEPTEMBER 30, 1976

Assets All Inclusive		*Totals*
SELECTED CURRENT ASSETS		
1. *Fund balances with Treasury:*		
a. Budget funds	228,750,293.61	
b. Budget clearing accounts	291,373.87	
c. Deposit funds	5,221,286.21	234,262,953.69
2. *Federal security holdings (at par)*	14,415,000.00	14,415,000.00
3. *Accounts receivable:*		
a. Government agencies	5,067,701.38	
b. The Public	7,658,653.14	
c. Allowances (—)	-33,675.80	12,692,678.72
4. *Advances to:*		
a. Government agencies	2,265,224.78	
b. The Public	8,620,611.69	10,885,836.47
5. TOTAL SELECTED CURRENT ASSETS		272,256,468.88
6. *Inventories:*		
a. Items for sale	13,529,124.70	
b. Work-in-process	67,231,492.19	
c. Raw materials and supplies	172,122,349.92	252,882,966.81
7. *Real property and equipment:*		
a. Land	25,223,444.67	
b. Structures and facilities	719,087,504.74	
c. Equipment	1,219,214,187.14	
d. Leasehold improvements	1,372,542.27	
e. Allowances (—)	-96,275,200.58	1,868,622,478.24
8. *Other assets:*		
a. Work-in-process, contractors	482,426,364.63	
b. Intangible assets	387,861.48	
c. Materials furnished to others	17,352,718.13	500,166,944.24
TOTAL ASSETS		2,893,928,858.17

TABLE XI FEDERAL AVIATION ADMINISTRATION FINANCIAL STATEMENT, AS OF SEPTEMBER 30, 1976 (continued)

Liabilities All Inclusive		*Totals*
SELECTED CURRENT LIABILITIES		
9. *Accounts payable (including funded accrued liabilities):*		
a. Government agencies	20,669,663.03	
b. The Public	158,448,262.51	179,117,925.54
10. *Advances from:*		
a. Government agencies	102,584.16	
b. The Public	49,896.04	152,480.20
TOTAL SELECTED CURRENT LIABILITIES		179,270,405.74
11. *Deposit fund liabilities*	5,540,226.98	5,540,226.98
12. *Unfunded liabilities:*		
a. Accrued annual leave	96,605,186.81	
b. Compensatory time earned	375,783.03	96,980,969.84
13. *Other liabilities:*		
a. Lease-purchase contracts	988,995.19	
b. Assets held for others	58,051.78	1,047,046.97
TOTAL LIABILITIES		282,838,649.53
Government Equity		
14. *Unexpended budget authority:*		
a. Unobligated	2,146,633,890.33	
b. Undelivered orders	949,106,395.69	3,095,740,286.02
15. *Unfinanced budget authority(—):*		
a. Unfilled customer orders	-12,046,859.83	
b. Contract authority	-3,000,500,000.00	-3,012,546,859.83
16. *Invested capital*	2,523,636,039.13	2,523,636,039.13
17. *Receipt account equity*	4,260,743.32	4,260,743.32
TOTAL GOVERNMENT EQUITY		2,611,090,208.64
TOTAL LIABILITIES AND GOVERNMENT EQUITY		2,893,928,858.17

TABLE XII SUMMARY OF FEDERAL AVIATION ADMINISTRATION TRAFFIC ACTIVITIES, FISCAL YEARS 1975-76

	Fiscal Year 1975	*Fiscal Year 1976*	*Percent Change*
ARTC Centers			
IFR aircraft handled (Departure times 2, plus overs)	23,585,999	23,924,963	+ 1
Towers			
Aircraft operations	58,934,700	62,491,505	+ 6
Instrument operations	26,063,156	28,090,000	+ 8
Instrument Approaches, Total	1,892,335	1,671,558	-12
ARTC Centers	193,903	152,115	-21
Approach control facilities	1,698,432	1,519,443	-11
Flight Service Stations			
All Flight Services	57,713,289	58,104,673	+ 1
Aircraft contacted	9,794,845	9,577,407	- 2
Flight plans originated	7,886,054	8,028,349	+ 2
Airport advisories	2,964,845	2,878,486	- 3
Pilot briefs	16,072,688	15,938,507	- 1
Combined Station/Towers			
All Flight Services	562,801	593,554	+ 5
Aircraft contacted	201,725	213,670	+ 6
Flight plans originated	92,293	96,963	+ 5
Pilot briefs	88,245	92,979	+ 5
International Flight Service Stations			
All Flight Services	1,843,873	1,832,448	- 1
Aircraft contacted	425,767	429,394	+ 1
Flight plans originated	360,434	371,799	+ 3
Airport advisories	1,071	1,205	+12
Pilot briefs	348,619	329,728	- 5

TABLE XIII U.S. GENERAL AVIATION ACCIDENTS, FATALITIES, AIRCRAFT HOURS FLOWN, AIRCRAFT MILES FLOWN, AND ACCIDENT RATES, CALENDAR YEARS 1966-75

Year	Accidents		Fatalities	Aircraft-Hours Flown (000)[3]	Aircraft-Miles Flown (000)[3]	Accident Rates			
						Per 100,000 Aircraft-Hours Flown		Per Million Aircraft-Miles Flown	
	Total	Fatal				Total	Fatal	Total	Fatal
1966	5,712	573	1,149[2]	21,023	3,336,138	27.2	2.73	1.71	0.172
1967	6,115	603	1,229	22,153	3,439,964	27.6	2.72	1.78	0.175
1968[4]	4,968[1]	692[1]	1,399	24,053	3,700,864	20.6	2.86	1.34	0.186
1969	4,767	647	1,413[2]	25,351	3,926,461	18.8	2.55	1.21	0.164
1970[5]	4,712[1]	641[1]	1,310	26,030	3,207,127	18.1	2.46	1.47	0.200
1971	4,648	661	1,355	25,512	3,143,181	18.2	2.59	1.48	0.211
1972	4,256[1]	695[1]	1,421[2]	26,974	3,317,100	15.8	2.57	1.28	0.209
1973	4,255[1]	723[1]	1,412	30,048	3,728,500	14.2	2.40	1.14	0.193
1974	4,425[1]	729[1]	1,438	32,475	4,042,700	13.6	2.24	1.04	0.180
1975	4,237[1]	675[1]	1,345	34,165	4,238,400	12.4	1.97	1.00	0.159

[1] SUICIDE/SABOTAGE ACCIDENTS INCLUDED IN ALL COMPUTATIONS EXCEPT RATES (1968-3, 1970-1, 1972-3, 1973-2, 1974-2, 1975-2)
[2] EXCLUDES AIR CARRIER FATALITIES (1966-2, 1967-104, 1969-82, 1972-5) WHEN IN COLLISION WITH GENERAL AVIATION AIRCRAFT.
[3] SOURCE: FAA
[4] COMMENCING JANUARY 1, 1968, THE DEFINITION OF SUBSTANTIAL DAMAGE WAS CHANGED; THEREFORE, FEWER ACCIDENTS WERE REPORTED. CARE SHOULD BE USED IN COMPARING WITH SIMILAR DATA FOR PRIOR YEARS
[5] BEGINNING IN 1970, THE DECREASE IN AIRCRAFT-MILES FLOWN IS THE RESULT OF A CHANGE IN THE FAA STANDARD FOR ESTIMATING MILES FLOWN

SOURCE: NATIONAL TRANSPORTATION SAFETY BOARD

TABLE XIV U.S. CERTIFICATED ROUTE AIR CARRIER ACCIDENTS, AIRCRAFT MILES FLOWN, AIRCRAFT HOURS FLOWN, DEPARTURES, AND ACCIDENT RATES, IN ALL SCHEDULED SERVICE, CALENDAR YEARS 1966-75

Year	Accidents		Accidents, Accident Rates Certificated Route Air Carriers All Scheduled Service 1966 - 1976			Accident Rates					
						Per Million Aircraft-Miles		Per 100,000 Aircraft-Hours		Per 100,000 Departures	
	Total	Fatal	Aircraft-Miles Flown (000)	Aircraft-Hours Flown	Departures	Total Accidents	Fatal Accidents	Total Accidents	Fatal Accidents	Total Accidents	Fatal Accidents
1966	56	5	1,482,273	4,232,982	4,373,229	0.038	0.003	1.323	0.118	1.281	0.114
1967	54	8	1,833,563	4,924,080	4,945,969	0.029	0.004	1.097	0.162	1.092	0.162
1968	56	13[1]	2,146,038	5,521,931	5,299,987	0.026	0.005	1.014	0.199	1.057	0.208
1969	51	8	2,385,082	5,892,254	5,377,302	0.021	0.003	0.866	0.136	0.948	0.149
1970	43	4	2,417,550	5,780,503	5,100,201	0.018	0.002	0.744	0.069	0.843	0.078
1971	43	7[1]	2,380,664	5,706,270	4,999,093	0.018	0.002	0.754	0.088	0.860	0.100
1972	46	7	2,347,864	5,659,485	4,966,256	0.020	0.003	0.813	0.124	0.926	0.141
1973	36	8	2,448,114	5,898,575	5,133,816	0.015	0.003	0.610	0.136	0.701	0.156
1974	43	7	2,258,136	5,474,495	4,725,783	0.019	0.003	0.767	0.110	0.889	0.127
1975	30	2	2,240,505	5,422,665	4,704,052	0.013	0.001	0.553	0.037	0.638	0.043

[1] INCLUDES 2 MIDAIR COLLISIONS NONFATAL TO AIR CARRIER OCCUPANTS, EXCLUDED IN FATAL ACCIDENT RATES

NOTE SABOTAGE ACCIDENT OCCURRING SEPTEMBER 8, 1974 IS INCLUDED IN ALL COMPUTATIONS EXCEPT RATES

SOURCE: NATIONAL TRANSPORTATION SAFETY BOARD

TABLE XV U.S. CERTIFICATED ROUTE AIR CARRIER ACCIDENTS, FATALITIES, PASSENGERS CARRIED, PASSENGER MILES FLOWN, AND FATALITY RATES, IN SCHEDULED DOMESTIC AND INTERNATIONAL PASSENGER SERVICE, CALENDAR YEARS 1966-75

	Accidents		Fatalities						
Year	Total	Fatal	Passenger	Crew	Other	Total	Passengers Carried [2]	Passenger-Miles Flown (000)	Pasg Fatality Rate Per 100 Million Passenger-Miles Flown
1966	50	4	59	13	0	72	97,745,566	62,964,948	0.094
1967	43	8	226	24	5	255	118,663,542	78,911,773	0.286
1968	42	11[1]	258	24	6	288	134,434,632	91,668,180	0.281
1969	36	7	132	17	3	152	142,364,035	100,815,837	0.131
1970	32	1	0	0	1	1	155,097,644	109,183,837	0
1971	33	6[1]	174	14	6	194	156,097,403	113,240,603	0.154
1972	37	6	160	13	12	185	169,931,415	123,775,960	0.129
1973	27	4	128	10	0	138	183,271,000	133,733,181	0.096
1974	31	3	158	10	0	168	189,723,697	137,657,951	0.115
1975	21	2	113	9	0	122	188,743,983	140,299,953	0.081

1 INCLUDES 2 MIDAIR COLLISIONS NONFATAL TO AIR CARRIER OCCUPANTS

2 BEGINNING IN 1970, CARRIERS WERE REQUIRED TO REPORT REVENUE PASSENGER ENPLANEMENTS WHEREAS PRIOR TO 1970 REVENUE PASSENGER ORIGINATIONS WERE REPORTED

SOURCE: NATIONAL TRANSPORTATION SAFETY BOARD

TABLE XVI SUMMARY OF U.S. TRAIN ACCIDENTS AND CASUALTIES, CALENDAR YEARS 1972-1975

	1972	1973	1974	1975
Number of train accidents[1]				
Collisions	1,348	1,657	1,551	1,002
Derailments	5,509	7,389	8,513	6,328
Other	675	652	630	711
Total train accidents	7,532	9,698	10,694	8,041
Number of train accidents with casualties	372	422	446	407
Number of casualties[2]				
Trespassers killed	537	578	565	524
Trespassers injured	586	614	674	703
Passengers killed in train accidents	47	6	7	8
Passengers injured in train accidents	680	503	574	1,307
Employees on duty killed	127	158	140	110
Employees on duty injured	12,456	13,098	15,620	47,312
All other persons killed	1,234	1,174	1,196	918
All other persons injured	4,208	4,030	3,950	4,978
Total number of persons killed	1,945	1,916	1,908	1,560
Total number of persons injured	17,930	18,245	20,818	54,300
Highway grade crossing accidents[3]	3,392	3,379	3,268	11,354
Persons killed	1,260	1,186	1,220	978
Persons injured	3,307	3,306	3,260	4,168

[1] THE MONETARY REPORTING THRESHOLD PRIOR TO 1975 WAS $750, IN 1975 IT WAS $1,750

[2] INCLUDES LOST TIME CASES ONLY UNTIL 1975. THE REPORTING REQUIREMENTS WERE CHANGED IN 1975 TO BE COMPARABLE TO OSHA REQUIREMENTS. INCLUDES CASES WITH LOST OR RESTRICTED TIME, THOSE REQUIRING MEDICAL TREATMENT BEYOND FIRST AID, THOSE RESULTING IN TERMINATION OF EMPLOYMENT, TRANSFER TO ANOTHER JOB, OR LOSS OF CONSCIOUSNESS, AND OCCUPATIONAL ILLNESS OF EMPLOYEES

[3] ALL IMPACTS BETWEEN ON TRACK EQUIPMENT AND HIGHWAY USERS WERE REPORTED IN 1975. PRIOR TO 1975, SUCH IMPACTS WERE REPORTED ONLY IF THEY RESULTED IN A REPORTABLE CASUALTY OR IN $750 IN DAMAGES TO RAILROAD ON-TRACK EQUIPMENT, SIGNALS, TRACK, TRACK STRUCTURES, OR ROADBED

TABLE XVII SUMMARY OF U.S. RAIL-HIGHWAY GRADE CROSSING ACCIDENTS AND CASUALTIES, CALENDAR YEARS 1972-75

Accidents[1] and Casualties[2]	1972			1973			1974			1975		
		No. of Persons			No. of Persons			No. of Persons			No. of Persons	
	No.	Killed	Injured	No.	Killed	Injured	No.	Killed	Injured	No.	Killed	Injured
Total rail-highway grade crossing accidents and resulting casualties	3,379	1,260	3,285	3,379	1,186	3,306	3,268	1,220	3,260	11,354	978	4,168
Accidents at highway grade crossings involving motor vehicles	3,222	1,190	3,201	3,190	1,078	3,215	3,089	1,128	3,166	10,925	788	3,600
Train accidents[3] as a result of collision between trains and motor vehicles	244	83	82	302	93	171	334	101	232	222	62	223
Railroad casualties:[4]												
Passengers	—	—	—	—	—	35	—	—	18	—	1	96
Employees on duty	—	1	68	—	5	103	—	3	102	—	5	117
TOTALS	—	1	68	—	5	38	—	3	120	—	6	213

[1] ALL IMPACTS BETWEEN ON-TRACK EQUIPMENT AND HIGHWAY USERS REPORTED IN 1975 PRIOR TO 1975, SUCH IMPACTS WERE REPORTED ONLY IF THEY RESULTED IN A REPORTABLE CASUALTY, OR IN $750 IN DAMAGES TO RAILROAD ON-TRACK EQUIPMENT, SIGNALS, TRACK, TRACK STRUCTURE, OR ROADBED

[2] INCLUDES LOST TIME CASES ONLY. PRIOR TO 1975 REPORTING REQUIREMENTS WERE CHANGED IN 1975 TO BE COMPARABLE WITH OSHA REPORTING, INCLUDES CASES WITH LOST OR RESTRICTED TIME, THOSE REQUIRING MEDICAL TREATMENT BEYOND FIRST AID, TERMINATION OF EMPLOYMENT, TRANSFER TO ANOTHER JOB, OR LOSS OF CONSCIOUSNESS, AND OCCUPATIONAL ILLNESSES OF EMPLOYEES

[3] MONETARY REPORTING THRESHOLD PRIOR TO 1975 WAS $750, IN 1975 IT WAS $1,750

[4] INCLUDED IN TOTALS

TABLE XVIII ALASKA RAILROAD ACTIVITIES, FISCAL YEARS 1975-76

	Revenue Freight Tons		Increase + Decrease − Percent
	Fiscal Year 75	Fiscal Year 76	
Products of Agriculture	13,232	9,353	−29.5
Animals	3,229	2,634	−18.6
Mines	594,712	723,931	+21.7
Forest	119,489	124,266	+ 4.0
Manufactures and Miscellaneous	1,033,579	1,211,280	+17.2
Forwarder Traffic (piggyback)	95,291	114,232	+19.9
LCL	2,511	2,337	− 7.0

IN THE FREIGHT CLASSIFICATION OF MANUFACTURES AND MISCELLANEOUS THERE WERE SIGNIFICANT CHANGES IN TONNAGE OF THE FOLLOWING COMMODITIES:

	Revenue Freight Tons		Increase + Decrease − Percent
	Fiscal Year 75	Fiscal Year 76	
Petroleum, Oil, Lubricants	557,368	632,633	+13.4
Manufactured Iron and Steel	60,186	88,997	+47.8
Iron and Steel Pipe and Fittings	106,780	173,897	+62.0
Machinery and Machines	59,465	30,490	−48.7
Cement-Natural-Portland	25,139	31,912	+26.9
Manufactures and Miscellaneous	43,466	29,446	−32.3

DURING FISCAL YEAR 1976 THERE WAS A SLIGHT INCREASE IN REVENUE PASSENGERS; 84,483 VERSUS 81,418 IN FISCAL YEAR 1975. PASSENGER REVENUES ALSO INCREASED 15 PERCENT; THE FISCAL YEAR 1976 PASSENGER REVENUES WERE $1,073,984 VERSUS $935,127 FOR FISCAL YEAR 1975.

TABLE XIX SUMMARY OF U.S. MOTOR VEHICLE ACTIVITIES AND FATALITIES, CALENDAR YEARS 1967 AND 1972-75*

	1967	1973	1974	1975**	% Change 1974-1975	Total %Change 1967-1975
Total Reg. (M/V's)(Thousands)	98,898	129,777	134,860	139,221	+ 3.23	+ 40.77
Automobiles	80,414	101,762	104,858	107,371	+ 2.40	− 33.52
Trucks**	16,193	23,233	24,589	25,882	+ 5.26	+ 59.88
Buses**	338	426	447	474	+ 6.04	+ 40.24
M/C's, etc.	1,953	4,356	4,966	5,494	+10.63	−181.31
Licensed Drivers (Thousands)	103,172	121,628	125,427	128,865	+ 2.74	+ 24.90
Percent Under 25	20.9	22.3	22.5	22.3	− 0.89	+ 6.70
Percent Over 64	7.9	9.1	9.3	9.3	+ 0.00	+ 17.72
Vehicle Mileage (Billions)	965	1,309	1,290	1,315	+ 1.94	+ 36.27
M/V Fatalities***	52,924	55,759	46,629	46,771	+ 0.30	− 11.63
M/V Fatalities per 100 Million Vehicle Miles	5.48	4.26	3.61	3.56	− 1.39	− 35.04

* ALL FIGURES EXCLUDE PUERTO RICE

** ESTIMATED

*** TRAFFIC FATALITIES ARE DEATHS RESULTING FROM MOTOR VEHICLE ACCIDENTS OCCURRING ON TRAFFICWAYS MOTOR VEHICLE FATALITIES INCLUDE TRAFFIC FATALITIES AS WELL AS DEATHS THAT OCCUR IN PLACES OTHER THAN TRAFFICWAYS

TABLE XX SUMMARY OF NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION AUTHORIZATIONS AND APPROPRIATIONS, FISCAL YEARS 1967-76

(Amounts in Millions of Dollars)

	FY 67	FY 68	FY 69	FY 70	FY 71	FY 72	FY 73	FY 74	FY 75	FY 76
Traffic and Motor Vehicle Safety Programs										
Authorization[1]	13.9	18.5	24.5	23.0	40.0	40.0	36.9	30.3	55.0	60.0
Appropriation	5.0	12.5	15.9	20.2	25.9	30.7	33.0	30.3	35.1	38.9
Automotive Fuel Economy and Consumer Information[2]										
Authorization	—	—	—	—	—	—	23.0	37.0	48.0	7.5
Appropriation	—	—	—	—	—	—	—	15.0	7.7	.7
Highway Safety Research and Development Programs										
Authorization[3]	10.0	20.0	25.0	30.0	37.5	70.0	115.0	42.5	55.0	65.0
Appropriation	4.3	7.3	10.6	10.0	17.0	38.6	44.2	38.6	28.1	29.0
Compliance Test Facility										
Authorization[1]	3.0[4]	2.3[5]	1.1[5]	0.0	0.0	9.6	0.0	0.0	0.0	0.0
Appropriation	.7	1.2	0.0	0.0	0.0	9.6	0.0	−9.0[6]	0.0	0.0
Total Traffic and Highway Safety Appropriation										
Authorization	23.9	38.5	49.5	53.0	77.5	119.6	151.9	109.8	158.0	
Appropriation[7]	9.3	19.8	26.5	30.2	42.9	78.9	77.2	75.1	70.9	68.0
State and Community Safety Appropriation										
Authorization	67.0	100.0	100.0	0.0[8]	0.0[8]	75.0[9]	130.0[10]	182.5[11]	203.0[12]	241.5[13]
(Incentives)								(37.5)	(48.0)	(56.5)
Obligations:										
NHTSA	2.0	25.0	65.0	70.0	75.0	67.1	82.1	66.8	85.3	100.9
(Incentives)								(.3)	(13.4)	(13.2)
FHWA						12.9	12.9	13.2	14.7	19.1
TOTAL	2.0	25.0	65.0	70.0	75.0	80.0	95.0	80.0	100.0	120.0

[1] AUTHORIZED UNDER THE NATIONAL TRAFFIC AND MOTOR VEHICLE SAFETY ACT
[2] AUTHORIZED UNDER THE MOTOR VEHICLE INFORMATION AND COST SAVINGS ACT
[3] AUTHORIZED UNDER THE HIGHWAY SAFETY ACT
[4] LUMP SUM AUTHORIZATION TO REMAIN AVAILABLE UNTIL EXPENDED
[5] REMAINING UNAPPROPRIATED BALANCE
[6] FUNDS APPROPRIATED FOR CONSTRUCTION OF COMPLIANCE TEST FACILITY WITHDRAWN
[7] THE TRAFFIC AND HIGHWAY SAFETY APPROPRIATION APPROPRIATES FUNDS FOR PROGRAMS OF BOTH SUBSTANTIVE ACTS AND THE MOTOR VEHICLE CONSUMER INFORMATION PROGRAM
[8] TOTAL AUTHORIZATION OF $175 MILLION RESCINDED UNDER THE HIGHWAY SAFETY ACT OF 1970.
[9] FOR FISCAL YEARS 1967-71 OBLIGATIONS WERE INCURRED IN TOTAL FOR 16 SAFETY STANDARDS. CURRENTLY, NHTSA HAS RESPONSIBILITY FOR 14½ STANDARDS, FHWA FOR 3½ STANDARDS
[10] INCLUDES AUTHORIZATION OF $30.0 MILLION FOR FHWA
[11] INCLUDES AUTHORIZATION OF $25.0 MILLION FOR FHWA AND $37.5 MILLION FOR INCENTIVE GRANTS FOR NHTSA
[12] INCLUDES AUTHORIZATION OF $30.0 MILLION FOR FHWA AND $48.0 MILLION FOR INCENTIVE GRANTS FOR NHTSA
[13] INCLUDES AUTHORIZATION OF $35.0 MILLION FOR FHWA AND $30.6 MILLION FOR INCENTIVE GRANTS FOR NHTSA

TABLE XXI SUMMARY OF U.S. MONTHLY TRAFFIC FATALITIES, FISCAL YEARS 1973-76

Month	Fatalities	FY 1973 Mileage[1]	Rate[2]	Fatalities	FY 1974 Mileage[1]	Rate[2]	Fatalities	FY 1975 Mileage[1]	Rate[2]	Fatalities	FY 1976 Mileage[1]	Rate[2]	% Change FY 76 vs 75	% Change FY 76 vs 73
July	5,289	1,185.94	4.46	5,186	1,216.85	4.26	4,337	1,202.31	3.61	4,537	1,237.00	3.67	+04.7	-14.2
August	5,215	1,199.13	4.35	5,241	1,244.26	3.02	4,616	1,229.01	3.76	4,434	1,257.99	3.52	-03.5	15.0
September	4,872	1,080.72	4.51	4,917	1,103.32	4.46	4,252	1,083.67	3.92	4,015	1,103.67	3.64	-05.4	-17.6
October	5,144	1,088.41	4.73	5,201	1,130.89	4.60	4,363	1,122.21	3.89	4,010	1,147.74	3.49	-08.2	-22.1
November	4,695	1,007.91	4.66	4,411	1,043.81	4.23	4,163	1,029.45	4.04	3,911	1,080.19	3.62	-06.0	-16.7
December	4,681	1,010.40	4.63	3,911	988.56	3.96	3,848	1,041.29	3.70	3,754	1,089.62	3.45	-02.5	-19.8
January	3,847	966.64	3.98	2,947	921.68	3.20	3,119	969.07	3.22	3,049	1,032.39	2.95	-02.2	-20.7
February	3,524	925.67	3.81	2,679	874.63	3.16	2,865	906.06	3.16	2,993	981.48	3.05	+04.4	-15.1
March	4,353	1,074.90	4.05	3,194	995.05	3.21	3,399	1,050.08	3.24	3,243	1,116.45	2.91	-04.5	-25.5
April	4,500	1,081.20	4.16	3,410	1,033.49	3.30	3,463	1,055.26	3.28	3,673	1,144.49	3.21	+06.6	-18.4
May	4,801	1,145.19	4.18	3,769	1,113.67	3.38	4,025	1,156.11	3.48	3,917	1,201.72	3.26	-02.6	-18.4
June	5,176	1,158.59	4.47	4,201	1,129.46	3.72	4,142	1,169.68	3.54	3,992	1,222.15	3.27	-03.6	-22.9
TOTAL	56,097			49,067			46,592			45,528				

[1] 100 MILLION MILES (10^8)
[2] FATALITIES PER 100 MILLION MILES TRAVELED

FIGURE 1
U.S. DEPARTMENT OF TRANSPORTATION
PROGRAM LEVELS, FISCAL YEAR 1976
AND THE TRANSITION QUARTER

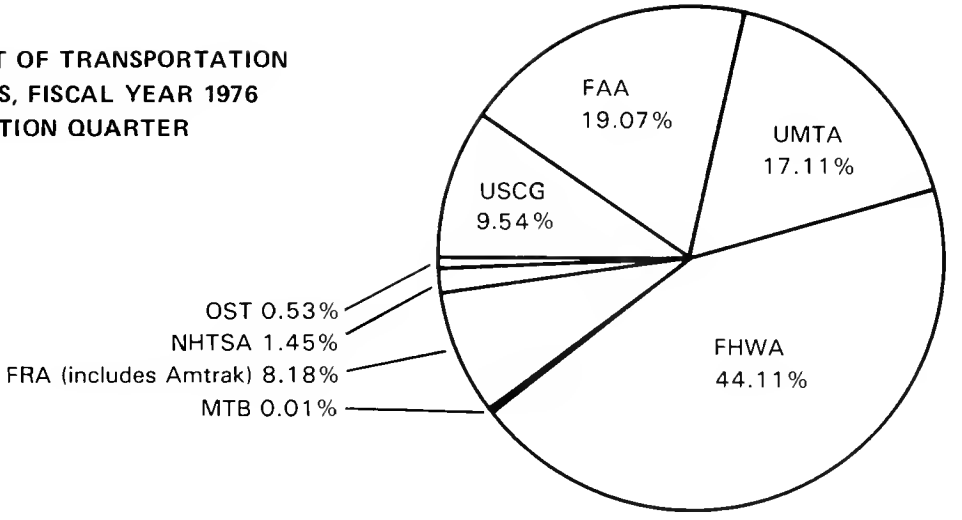


FIGURE 2
U.S. DEPARTMENT OF TRANSPORTATION
GRANT AWARDS BY GRANT PROGRAM,
FISCAL YEAR 1976 AND THE
TRANSITION QUARTER

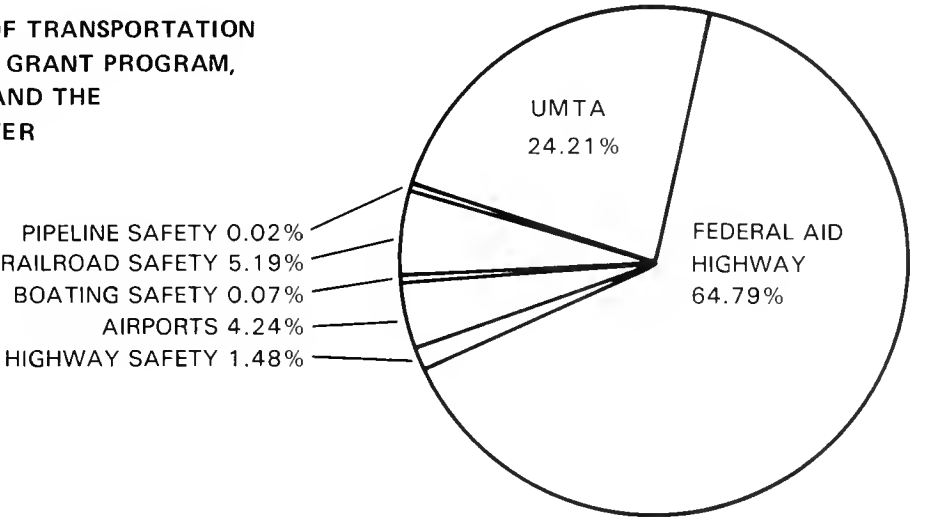


FIGURE 3
U.S. DEPARTMENT OF TRANSPORTATION
AUTHORIZED FULL-TIME PERMANENT POSITIONS,
FISCAL YEAR 1976

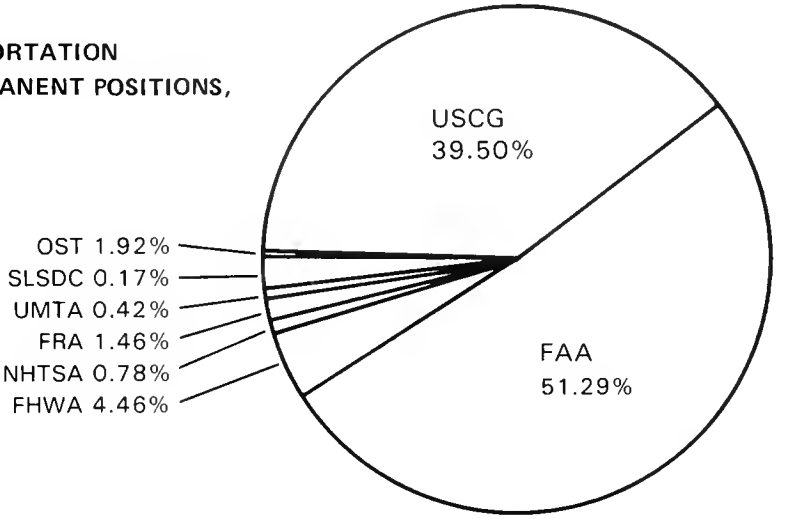


FIGURE 4 U.S. TRANSPORTATION ACCIDENTS AND FATALITIES, CALENDAR YEARS 1966-75

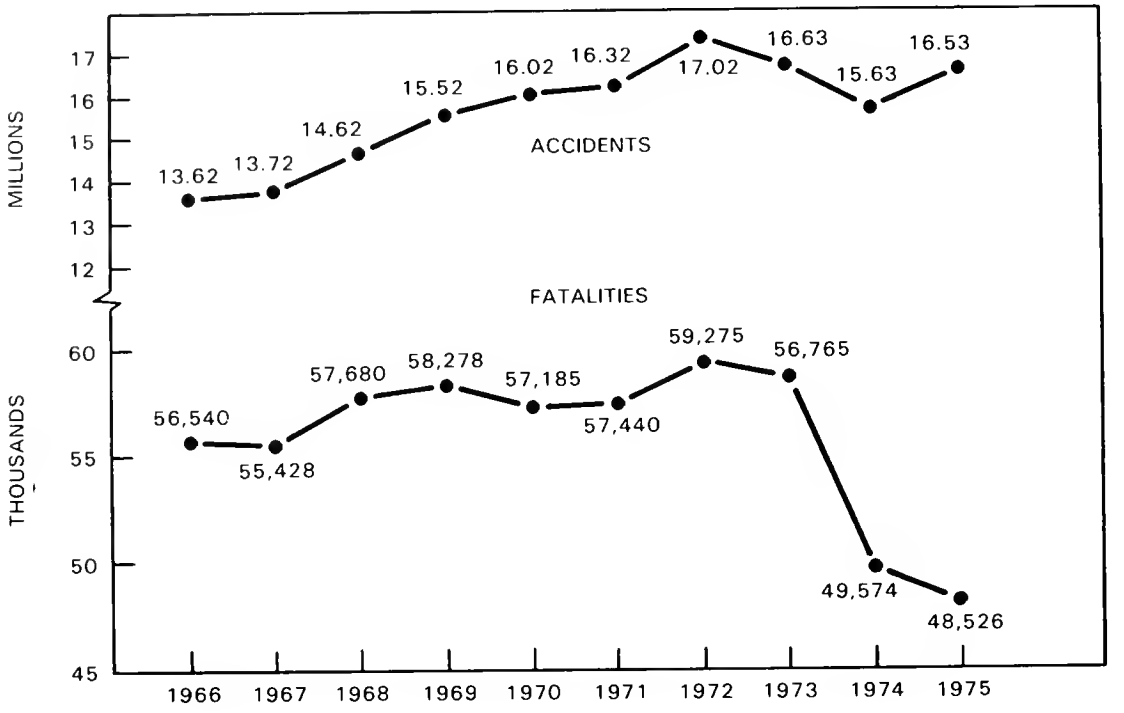


FIGURE 5 TOTAL AMTRAK SYSTEM PERFORMANCE BY FUNCTION, FISCAL YEARS 1972-76

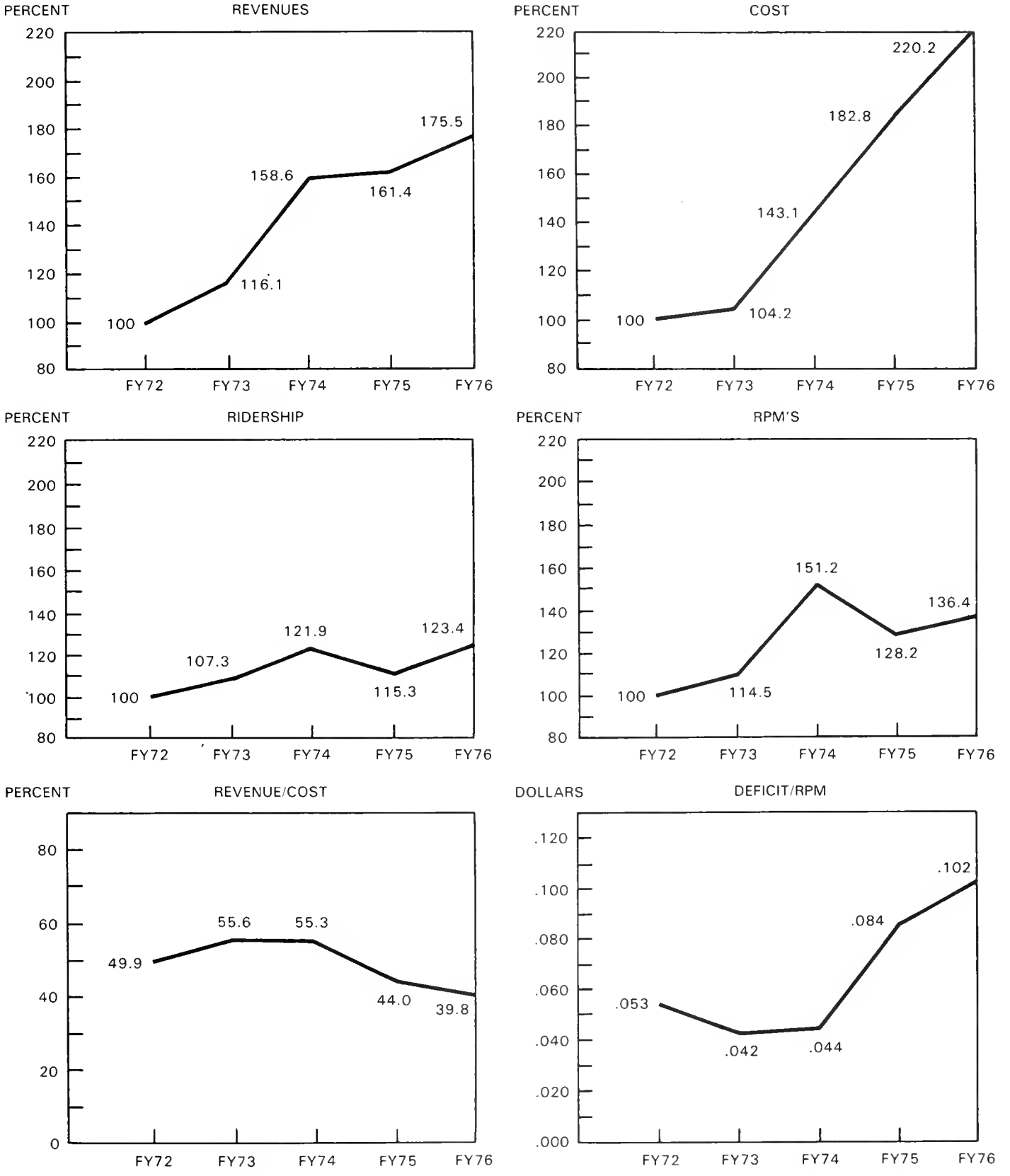


FIGURE 6 CHANGES IN U.S. TRAFFIC FATALITIES AND FATALITY RATES, FISCAL YEARS 1974-76 VERSUS 1973

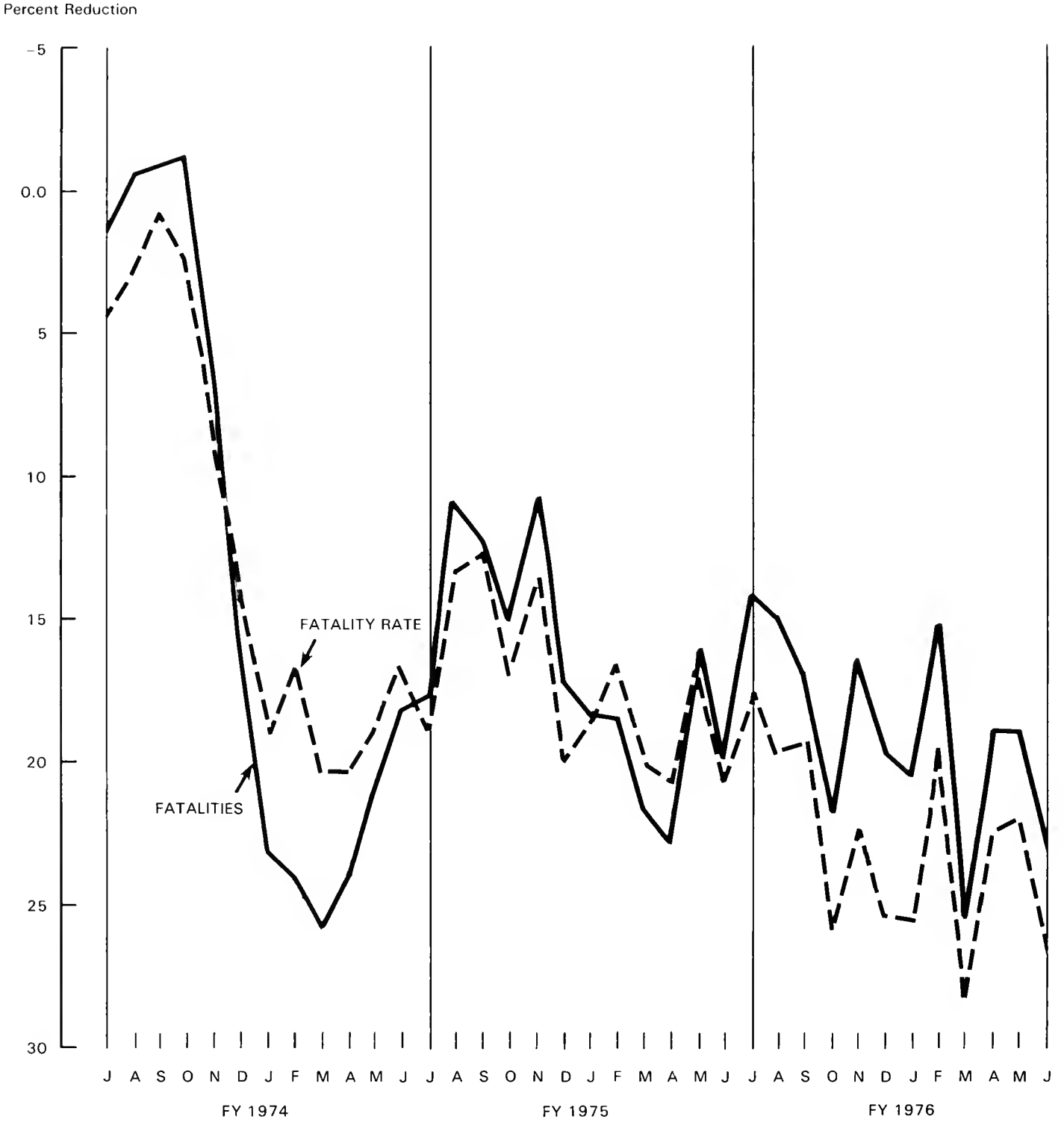
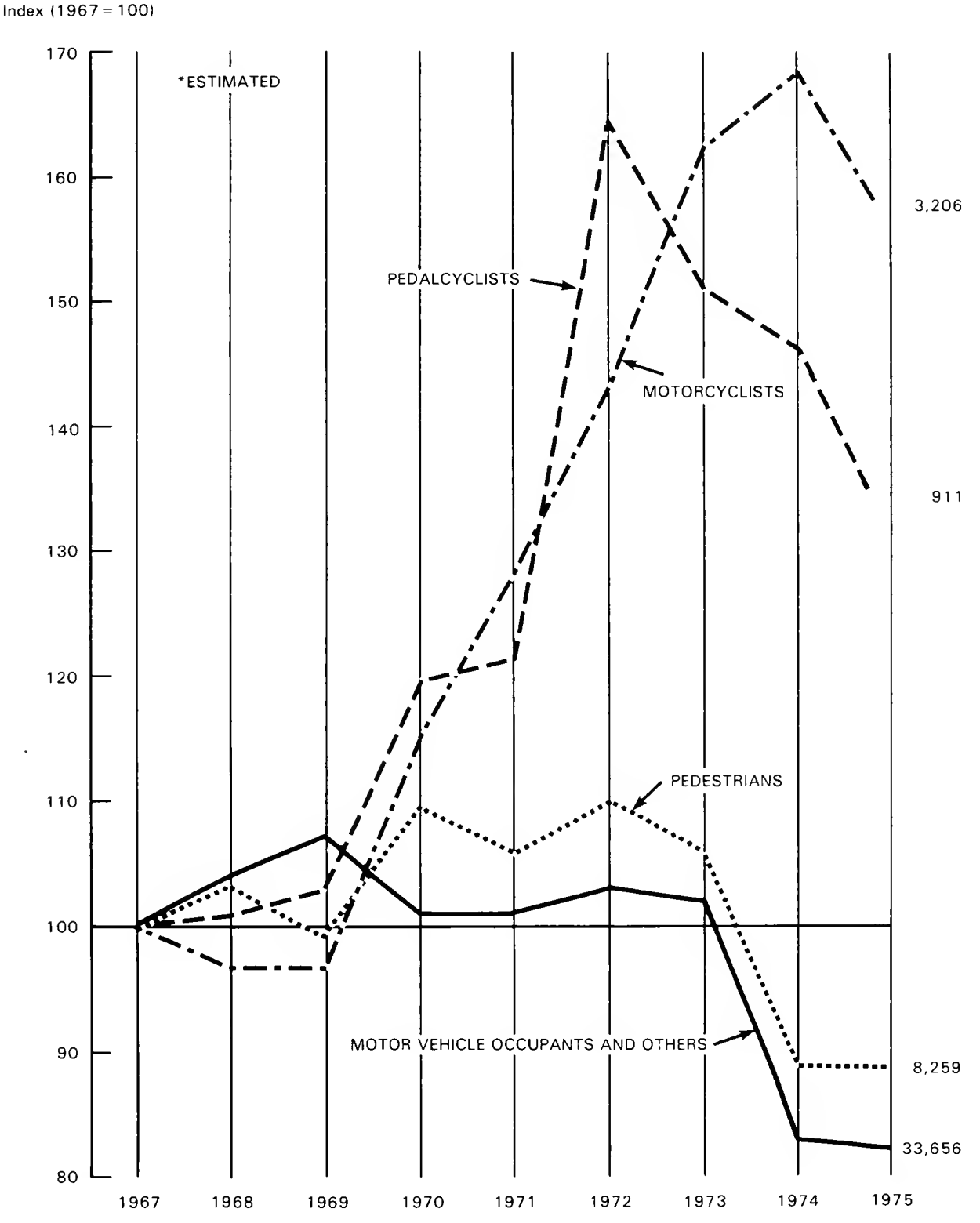


FIGURE 7 RELATIVE CHANGES IN HIGHWAY FATALITIES BY PRINCIPAL CATEGORIES, CALENDAR YEARS 1967-75*



SOURCE: ESTIMATED BY NHTSA FROM DATA SUPPLIED BY NATIONAL CENTER FOR HEALTH STATISTICS, DHEW.

☆ U.S. GOVERNMENT PRINTING OFFICE : 1978 O—268-716